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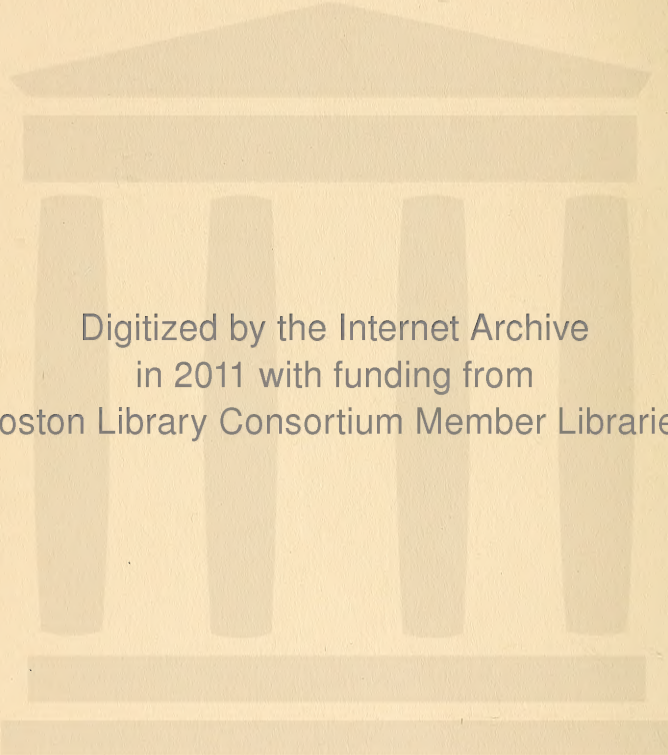


**MASSACHUSETTS
AGRICULTURAL
COLLEGE**

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THE SIXTY-THIRD ANNUAL REPORT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE

PART II. — CATALOGUE OF THE COLLEGE FOR 1925-1926



M. S. C.
COLLECTION
The Commonwealth of Massachusetts

MASSACHUSETTS AGRICULTURAL COLLEGE,
AMHERST, November 30, 1925.

To the Commissioner of Education.

SIR: — On behalf of the trustees of the Massachusetts Agricultural College I have the honor to transmit herewith Part II of the sixty-third annual report of the trustees for the fiscal year ended November 30, 1925, this being the catalogue of the college.

Respectfully yours,

EDWARD M. LEWIS,
Acting President.

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Without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. — *Act of Congress, July 2, 1862.*

This issue of the catalogue represents the status of the college for the current college year, with provisional announcement of courses of study and other matters for the year to follow. When deemed necessary, additional announcements are made in a supplementary bulletin, published in the spring.

The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue.

CALENDAR.

1925-1926.

1925.

September 14, Monday	Fall term begins for Freshmen
September 16, Wednesday	Fall term begins for all except Freshmen; Assembly 1.30 P.M.
October 12, Monday	Holiday — Columbus Day
November 25-30, Wednesday, 12 M.-Monday, 7.30 A.M.	Thanksgiving Recess
December 19, Saturday, 12 M.	Fall Term Ends

1926.

January 4, Monday, 7.30 A.M.	Winter term begins
February 22, Monday	Holiday, Washington's Birthday
March 20, Saturday, 12 M.	Winter term ends.
March 29, Monday, 7.30 A.M.	Spring term begins
April 19, Monday	Holiday, Patriot's Day
May 31, Monday	Holiday, Observance of Memorial Day
June 11-14, Friday-Monday	Commencement
June 17-19, Thursday-Saturday	Entrance Examinations
September 8-11, Wednesday-Saturday	Entrance Examinations
September 13, Monday	Fall term begins for Freshmen
September 15, Wednesday	Fall term begins for all except Freshmen
October 12, Tuesday	Holiday, Columbus Day
November 24-29, Wednesday, 12 M.-Monday, 7.30 A.M.	Thanksgiving Recess
December 18, Saturday, 12 M.	Fall term ends

1927.

January 3, Monday, 7.30 A.M.	Winter term begins
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MASSACHUSETTS AGRICULTURAL COLLEGE.

HISTORY. — The Massachusetts Agricultural College was organized under the national land grant act of 1862. This legislation is also known as the Morrill act, the original bill having been framed by Justin Smith Morrill, Senator from Vermont, and its final enactment secured under his leadership. It provided that public lands be assigned to the several States and territories, the funds from the sale of which were to be used to establish and maintain colleges of agriculture and mechanic arts. The Massachusetts Agricultural College was among the first of these institutions established. When this act was passed the Massachusetts Institute of Technology was already organized, and the State of Massachusetts decided that the instruction in the mechanic arts should be at the Institute, and that the new institution should confine its work to agriculture. On this account the Massachusetts Agricultural College has the unique distinction of being the only separate agricultural college in the country.

In 1863 the State of Massachusetts accepted the provisions of the Morrill act and incorporated the Agricultural College. The location at Amherst was selected only after long and careful study by the original Board of Trustees. The college was formally opened to students on the 2d of October, 1867, with a faculty of four teachers and with four wooden buildings.

The Massachusetts Legislature has granted money for the erection of practically all of the buildings now on the grounds. In view of the fact that the annual income from the original endowment has been only a few thousand dollars, it has been necessary for the State to assume large responsibility for the current expenses of the institution.

ORGANIZATION. — The college is a State institution, serving in the Department of Education and as such is subject to the laws governing and the rules applying to all State departments and institutions. The work of the college is directed by a board of eighteen trustees. Four of these are ex-officio members, — the Governor of the State, the Commissioner of Education, the Commissioner of Agriculture and the President of the college. The other fourteen members are appointed by the Governor, two each year, for terms of seven years. The immediate control of the institution is vested in the President of the college. The administrative officers, having supervision of the various departments of activity, are directly responsible to the President.

In carrying out its purpose the college has organized three distinct yet correlated types of work, — namely, research, resident instruction and extension service.

RESEARCH. — In 1882 Massachusetts provided for the establishment of an agricultural experiment station. This station, though on the college grounds and supported by the State, was without organic connection with the college. Under an act of Congress, passed in 1887, an agricultural experiment station was established and supported as a department of the college. For a time, therefore, Massachusetts had two experiment stations at the college. In 1895 these were combined, and the station reorganized as a department of the college. It is now supported by funds from both the State and the Federal government. In 1906 the Federal government largely increased its support on condition that the money thus provided should be used only for research. The station now receives about two-thirds of its support from the State.

The station is under the direct supervision of the Board of Trustees; the chief officer is the director, who is responsible to the President. It is organized into a

number of departments, all co-operating toward the betterment of agriculture. In most cases the heads of these departments are heads of corresponding departments in the college.

RESIDENT INSTRUCTION. — The college offers an education without tuition fee to any student who is a resident of Massachusetts and who meets the requirements for admission. Women are admitted on the same basis as are men. Students who are not residents of Massachusetts are required to pay a tuition fee. The chief aim of the institution, through its resident instruction, is to prepare men and women for the agricultural vocations. The term "agricultural vocations" is here used in its broadest sense. Courses are offered which give efficient training in various agricultural pursuits, such as general farming, dairying, management of estates, poultry husbandry, fruit growing, market gardening, floriculture, landscape gardening and forestry. Students are also trained for investigation in many sciences underlying the great agricultural industry, for teaching in agricultural colleges and high schools, and for scientific work in chemistry, entomology, botany and microbiology. Comprehensive courses in home making are now available for women.

Though training for the agricultural vocations is thus the chief concern of the college, students should find the course one that trains them admirably for pursuits in which the sciences are an essential preparation. The course of study aims also to combine an adequate general education with specialized technical and practical training.

FOUR-YEAR COURSES. — Twenty-nine teaching departments offer instruction in agriculture, horticulture, sciences, the humanities, rural social science and home making. A system of major courses permits the student to elect major work in one of sixteen departments, and to specialize in it and allied subjects for a period of two years. The degree of bachelor of science is granted on the satisfactory completion of the four years' work of collegiate grade.

SHORT COURSES. — In order to extend the advantages of the institution to those men and women who cannot or do not care to pursue the four-year course, various short courses are offered. Chief among these are a two-year course in practical agriculture, a summer school of agriculture and country life, and a winter school of agriculture.

GRADUATE SCHOOL. — The graduate school is organized to provide the necessary training for scientific leadership in agriculture and allied sciences. The degrees of master of agriculture, master of landscape architecture, master of science, doctor of agriculture and doctor of philosophy may be earned upon the completion of satisfactory study, research and thesis.

THE EXTENSION SERVICE. — The Extension Service is the organized educational agency of the college which serves the people of the State other than resident students. Its function is to make available to Massachusetts citizens useful and practical information in agriculture and home economics which is developed by the experiment station or the United States Department of Agriculture, and which is taught by the college to resident students. It is the recognized agency of the United States Department of Agriculture for teaching those who cannot attend college, and is a cooperative effort by the Department of Agriculture, the Massachusetts Agricultural College, and the County Extension Services.

The Extension Service uses many methods of work, among which are the following:

- Demonstrations.
- Publications.
- Correspondence Courses.
- Lectures.
- Exhibits.
- Extension Schools.
- Leader-training Groups.
- Boys' and Girls' Clubs in Agriculture and Home Economics.
- Agricultural News Letters.

Literature descriptive of these various services will be mailed on request. Information may also be secured from the county agricultural agents at the following addresses:

Berkshire County Extension Service, Howard Block, Pittsfield, Mass.
Bristol County Agricultural School, Segreganset, Mass.
Cape Cod Extension Service, Hyannis, Mass.
Essex County Agricultural School, Hathorne, Mass.
Franklin County Extension Service, Sheldon Block, Greenfield, Mass.
Hampden County Improvement League, 244 Main St., Springfield, Mass.
Hampshire County Extension Service, 59 Main St., Northampton, Mass.
Middlesex County Extension Service, 12 Moody St., Waltham, Mass.
Norfolk County Agricultural School, Walpole, Mass.
Plymouth County Extension Service, 106 Main St., Brockton, Mass.
Worcester County Extension Service, 11 Foster St., Worcester, Mass.

LOCATION AND EQUIPMENT. — The Agricultural College is located in the town of Amherst. The grounds comprise approximately 700 acres, lying about a mile north of the village center. The college has also a demonstration forest of 755 acres, located 6 miles north of the campus. The equipment of the college, both in buildings and facilities for instruction, is excellent. Amherst is 97 miles from Boston, and may be reached by the Central Massachusetts division of the Boston & Maine Railroad, or by the Central Vermont Railroad. Electric car lines connect Amherst with Northampton, Holyoke and Springfield.

MILITARY DRILL. — By Federal law military drill is required of all regular students attending the Massachusetts Agricultural College.

THE TRUSTEES.

Organization of 1925.

MEMBERS OF THE BOARD.

	TERM EXPIRES
DAVIS R. DEWEY of Cambridge	1926
JOHN F. GANNON of Pittsfield	1926
ARTHUR G. POLLARD of Lowell	1927
GEORGE H. ELLIS of West Newton	1927
JOHN CHANDLER of Sterling Junction	1928
ATHERTON CLARK of Newton	1928
NATHANIEL I. BOWDITCH of Framingham	1929
WILLIAM WHEELER of Concord	1929
CHARLES A. GLEASON ¹ of North Brookfield	1930
JAMES F. BACON of Boston	1930
FRANK GERRETT of Greenfield	1931
HAROLD L. FROST of Arlington	1931
CHARLES H. PRESTON of Danvers	1932
CARLTON D. RICHARDSON of West Brookfield	1932

MEMBERS EX OFFICIO.

His Excellency Governor ALVAN T. FULLER, *President of the Board of Trustees.*
EDWARD M. LEWIS, *Acting President of the College.*
PAYSON SMITH, *State Commissioner of Education.*
ARTHUR W. GILBERT, *State Commissioner of Agriculture.*

OFFICERS OF THE TRUSTEES.

His Excellency Governor ALVAN T. FULLER of Boston, *President.*
CHARLES A. GLEASON¹ of North Brookfield, *Vice-President.*
RALPH J. WATTS of Amherst, *Secretary.*
FRED C. KENNEY of Amherst, *Treasurer.*
CHARLES A. GLEASON¹ of North Brookfield, *Auditor.*

STANDING COMMITTEES OF THE TRUSTEES.²

Committee on Finance.

CHARLES A. GLEASON, ¹ <i>Chairman.</i>	ARTHUR G. POLLARD.
GEORGE H. ELLIS.	CARLTON D. RICHARDSON.
NATHANIEL I. BOWDITCH.	ATHERTON CLARK.

Committee on Course of Study and Faculty.

WILLIAM WHEELER, <i>Chairman.</i>	DAVIS R. DEWEY.
JAMES F. BACON.	JOHN F. GANNON.
PAYSON SMITH.	ARTHUR W. GILBERT.

¹ Died September 29, 1925.
² The President of the College is ex-officio member of each committee.

*Committee on Farm.*NATHANIEL I. BOWDITCH, *Chairman.*

GEORGE H. ELLIS.

FRANK GERRETT.

ARTHUR W. GILBERT.

CARLTON D. RICHARDSON.

*Committee on Horticulture.*HAROLD L. FROST, *Chairman.*

JOHN CHANDLER.

CHARLES A. GLEASON.¹

ATHERTON CLARK.

CHARLES H. PRESTON.

*Committee on Experiment Department.*CHARLES H. PRESTON, *Chairman.*

ARTHUR G. POLLARD.

ARTHUR W. GILBERT.

HAROLD L. FROST.

JOHN CHANDLER.

CARLTON D. RICHARDSON.

*Committee on Buildings and Arrangement of Grounds.*GEORGE H. ELLIS, *Chairman.*

JAMES F. BACON.

FRANK GERRETT.

CHARLES H. PRESTON.

WILLIAM WHEELER.

ATHERTON CLARK.

*Committee on Extension Service.*JOHN CHANDLER, *Chairman.*

HAROLD L. FROST.

NATHANIEL I. BOWDITCH.

DAVIS R. DEWEY.

GEORGE H. ELLIS.

JOHN F. GANNON.

ARTHUR W. GILBERT.

¹ Died September 29, 1925.

OFFICERS OF THE INSTITUTION.

As of Nov. 1, 1925.

Officers of General Administration.

EDWARD M. LEWIS, A.M.	President's House.
Dean and Acting President.	
SIDNEY B. HASKELL, B.Sc.	2 Mount Pleasant.
Director of Experiment Station.	
FRED C. KENNEY	Mount Pleasant.
Treasurer of the College.	
WILLIAM L. MACHMER, A.M.	25 Amity Street.
Acting Registrar and Acting Dean of the College.	
CHARLES E. MARSHALL, Ph.D.	10 South Prospect Street.
Director of the Graduate School.	
RICHARD A. MELLEN, B.Sc.	25 Fearing Street.
Field Agent.	
ROLAND H. VERBECK, B.Sc.	Tyler Place.
Director of Short Courses.	
RALPH J. WATTS, B.Sc.	101 Butterfield Terrace.
Secretary of the College.	
JOHN D. WILLARD, M. Sc.	31 Lincoln Avenue.
Director of the Extension Service.	
BASIL B. WOOD, A.B.	6 Boltwood Avenue.
Librarian of the College.	

The Faculty of Instruction.

EDWARD M. LEWIS, A.M.	President's House.
Dean and Acting President of the College, Professor of Languages and Literature, Head of Department and Head of Division of Humanities.	
MAX F. ABELL, Ph.D.	North Amherst.
Assistant Professor of Farm Management.	
GEORGE W. ALDERMAN, B.A.	Tillson Court.
Assistant Professor of Physics.	
CHARLES P. ALEXANDER, Ph.D.	120 Pleasant Street.
Assistant Professor of Entomology.	
LUTHER B. ARRINGTON, B.Sc.	41 Lincoln Avenue.
Instructor in Horticulture.	
EDGAR L. ASHLEY, A.M.	Amherst House.
Professor of French.	
LORIN E. BALL, B.Sc.	3 Allen Street.
Instructor in Physical Education.	
LUTHER BANTA, B.Sc.	Sunset Avenue.
Assistant Professor of Poultry Husbandry.	
MARY A. BARTLEY	12 East Pleasant Street.
Instructor in Home Economics.	
ARTHUR B. BEAUMONT, Ph.D.	51 Amity Street.
Professor of Agronomy and Head of Department.	
LEON A. BRADLEY, Ph.D.	North Amherst.
Assistant Professor of Microbiology.	

- N. BUTLER BRISCOE, Major, Cavalry, U. S. A.
Professor of Military Science and Tactics, and Head of Department.
- FREDERIC R. BUTLER, Ph.D. 42 Lincoln Avenue.
Instructor in Chemistry.
- ALEXANDER E. CANCE, Ph.D. 9 Fearing Street.
Professor of Agricultural Economics and Head of Department.
- MORTON H. CASSIDY, B.Sc. The Apiary.
Assistant Professor of Beekeeping.
- JOSEPH S. CHAMBERLAIN, Ph.D. Mount Pleasant.
Professor of Organic and Agricultural Chemistry.
- WALTER W. CHENOWETH, M.Sc. North Amherst.
Professor of Horticultural Manufactures and Head of Department.
- ORTON L. CLARK, B.Sc. 12 College Street.
Assistant Professor of Botany.
- G. CHESTER CRAMPTON, Ph.D. Fernald Hall.
Professor of Insect Morphology.
- WILLIAM H. DAVIS, Ph.D. 12 Nutting Avenue.
Assistant Professor of Botany.
- LLEWELLYN L. DERBY Amherst House.
Instructor in Physical Education.
- LAWRENCE S. DICKINSON, B.Sc. 2 Farview Way.
Assistant Professor of Horticulture.
- BROOKS D. DRAIN, S.M. 17 Fearing Street.
Assistant Professor of Pomology.
- HENRY T. FERNALD, Ph.D. 44 Amity Street.
Professor of Entomology, Head of Department, Chairman of Division of Science.
- MARY J. FOLEY, B.Sc. 3 South Prospect Street.
Instructor in Agricultural Economics.
- JAMES A. FOORD, M.Sc.Agr. 54 Lincoln Avenue.
Professor of Farm Management and Head of Department, Acting Head, Division of Agriculture.
- ARTHUR P. FRENCH, M.Sc. 9 Phillips Street.
Instructor in Pomology.
- GEORGE E. GAGE, Ph.D. The Davenport.
Professor of Animal Pathology and Head of Department of Veterinary Science and Animal Pathology.
- MARY E. M. GARVEY, B.Sc. 29 South Prospect Street.
Instructor in Microbiology.
- GUY V. GLATFELTER, M.Sc. 29 Northampton Road.
Assistant Professor of Animal Husbandry.
- HARRY N. GLICK, Ph.D. 27 Fearing Street.
Professor of Agricultural Education.
- HELENA T. GOESSMANN, M.Ph. 35 South Pleasant Street.
Instructor in English.
- CLARENCE E. GORDON, Ph.D. 38 Lincoln Avenue.
Professor of Zoology and Geology and Head of Department.
- HAROLD M. GORE, B.Sc. Plainville Road.
Assistant Professor of Physical Education.
- JOHN C. GRAHAM, B.Sc.Agr. 68 Lincoln Avenue.
Professor of Poultry Husbandry and Head of Department.
- LAURENCE R. GROSE, A.B., M.F. 32 Amity Street.
Professor of Forestry and Head of Department.
- CHRISTIAN I. GUNNESS, B.Sc. 105 Butterfield Terrace.
Professor of Rural Engineering and Head of Department.
- RAYMOND HALLIDAY, B.A. The Davenport.
Instructor in French.
- MARGARET HAMLIN, B.A. 12 North East Street.
Agricultural Counsellor for Women.

Part II.

ARTHUR K. HARRISON	8 Allen Street.
Assistant Professor of Landscape Gardening.	
CURRY S. HICKS, B.Pd.	The Davenport.
Professor of Physical Education and Hygiene and Head of Department.	
Mrs. CURRY S. HICKS	The Davenport.
Instructor in Physical Education.	
DWIGHT HUGHES, Jr., Captain, Cavalry, U. S. A.	The Davenport.
Assistant Professor of Military Science and Tactics.	
BELDING F. JACKSON, B.Sc.	Belchertown.
Instructor in English.	
HENRY F. JUDKINS, B.Sc.	103 Butterfield Terrace.
Professor of Dairying and Head of Department.	
ARTHUR N. JULIAN, A.B.	4 Farview Way.
Professor of German.	
DANIEL J. KEANE, Captain, Cavalry, U. S. A.	The Davenport.
Assistant Professor of Military Science and Tactics.	
PAUL KELLER, B.Sc.	81 Pleasant Street.
Instructor in German.	
HELEN KNOWLTON, A.M.	3 McClellan Street.
Assistant Professor of Home Economics.	
MARSHALL O. LANPHEAR, B.Sc.	4 Nutting Avenue.
Assistant Professor of Agronomy.	
JOHN B. LENTZ, A.B., V.M.D.	3 Dana Street.
Assistant Professor of Veterinary Science and College Veterinarian.	
JOSEPH B. LINDSEY, Ph.D.	47 Lincoln Avenue.
Goessmann Professor of Agricultural Chemistry and Head of Department.	
WILLIAM L. MACHMER, A.M.	25 Amity Street.
Professor of Mathematics, Acting Dean and Acting Registrar.	
MERRILL J. MACK, M.Sc. ¹	32 North Prospect Street.
Instructor in Dairying.	
ALEXANDER A. MACKIMMIE, A.M.	North Amherst.
Professor of Economics and Sociology and Head of Department.	
MINER J. MARKUSON, B.Sc.	Farview Way.
Assistant Professor of Rural Engineering.	
CHARLES E. MARSHALL, Ph.D.	10 South Prospect Street.
Professor of Microbiology and Head of Department.	
FREDERICK A. McLAUGHLIN, B.Sc.	4 Nutting Avenue.
Assistant Professor of Botany.	
CHARLES A. MICHELS, M.Sc.	70 Lincoln Avenue.
Assistant Professor of Agronomy.	
ENOS J. MONTAGUE, B.Sc.	Campus.
Assistant Professor of Farm Practice and Farm Superintendent.	
FRANK C. MOORE, A.B.	10 Allen Street.
Assistant Professor of Mathematics.	
HARRY T. MORTENSEN, B.Sc.	Sunderland.
Instructor in Microbiology.	
RICHARD T. MULLER, M.Sc.	45 East Pleasant Street.
Assistant Professor of Floriculture.	
JOHN B. NEWLON	North Amherst.
Instructor in Rural Engineering.	
A. VINCENT OSMUN, M.Sc.	16 Northampton Road.
Professor of Botany and Head of Department.	
JOHN E. OSTRANDER, A.M., C.E.	33 North Prospect Street.
Professor of Mathematics and Head of Department.	
CHARLES H. PATTERSON, A.M.	26 Lincoln Avenue.
Professor of English.	
HARLOW L. PENDLETON, B.Sc.	Fearing Street.
Instructor in Dairying.	

¹ Temporary for one year.

12		P.D. 31.
CHARLES A. PETERS, Ph.D.	Professor of Inorganic and Soil Chemistry.	Sunset Place.
WALLACE F. POWERS, Ph.D.	Professor of Physics and Head of Department.	7 Allen Street.
WALTER E. PRINCE, A.M.	Assistant Professor of English.	27 Amity Street.
MARION C. PULLEY, B.Sc.	Instructor in Poultry Husbandry.	68 Lincoln Avenue.
GEORGE F. PUSHEE	Instructor in Rural Engineering.	North Amherst.
LEON R. QUINLAN, M.L.A.	Assistant Professor of Landscape Gardening.	Tyler Place.
GEORGE J. RALEIGH, M.Sc.	Instructor in Pomology.	7 East Pleasant Street.
FRANK PRENTICE RAND, A.M.	Assistant Professor of English.	3 Mount Pleasant.
VICTOR A. RICE, M.Agr.	Assistant Professor of Animal Husbandry.	35 Woodside Avenue.
GORDON C. RING, A.M.	Instructor in Zoology.	42 Lincoln Avenue.
WILLIAM F. ROBERTSON, B.Sc.	Instructor in Horticultural Manufactures.	33 East Pleasant Street.
WILLIAM C. SANCTUARY, B.Sc.	Professor of Poultry Husbandry.	11 Cottage Street.
DONALD W. SAWTELLE, M.Sc.	Assistant Professor of Agricultural Economics.	5 Allen Street.
FRED C. SEARS, M.Sc.	Professor of Pomology and Head of Department.	Mount Pleasant.
PAUL SEREX, Jr., Ph.D.	Assistant Professor of Chemistry.	Lincoln Avenue.
GEORGE F. SHUMWAY, B.Sc.	Instructor in Mathematics.	Inwood.
NEWELL L. SIMS, Ph.D. ¹	Professor of Rural Sociology.	
EDNA L. SKINNER, B.Sc.	Professor of Home Economics, Head of Department, Adviser of Women.	50 Lincoln Avenue.
HAROLD W. SMART, LL.B. ²	Instructor in Farm Law.	Lincoln Block.
RICHARD W. SMITH, Jr., B.Sc. ¹	Instructor in Dairying.	
GRANT B. SNYDER, B.Sc.Agr.	Instructor in Vegetable Gardening.	Lincoln Block.
ORMAN E. STREET, B.Sc.	Instructor in Agronomy.	East Experiment Station.
CHARLES H. THAYER	Instructor in Agronomy.	South East Street.
CLARK L. THAYER, B.Sc.	Professor of Floriculture and Head of Department.	North Amherst.
CHARLES H. THOMPSON, M.Sc.	Professor of Horticulture.	Mount Pleasant.
RAY E. TORREY, Ph.D.	Assistant Professor of Botany.	Inwood.
MALCOMB E. TUMEY, B.Sc.	Instructor in Physical Education.	3 Allen Street.
RALPH A. VAN METER, B.Sc.	Professor of Pomology.	7 East Pleasant Street.
PAUL W. VIETS	Supervisor of Placement Training.	Sunset Avenue.

¹ Absent on leave.

² Temporary for one year.

FRANK A. WAUGH, M.Sc.	Campus.
Professor of Landscape Gardening, Head of Department, Head of Division of Horticulture.	
WINTHROP S. WELLES, B.Sc.	23 Lincoln Avenue.
Professor of Agricultural Education and Head of Department.	
T. GEORGE YAXIS, M.Sc.	5 Sunset Avenue.
Assistant Professor of Dairying.	

Professor of Animal Husbandry and Head of Department.

Professor of Rural Sociology and Head of Department.

Assistant Professor of Vegetable Gardening.

Instructor in Animal Husbandry.

The Experiment Station Staff.

EDWARD M. LEWIS, A.M.	President's House.
Dean and Acting President of the College.	
SIDNEY B. HASKELL, B.Sc.	2 Mount Pleasant.
Director.	
JAMES R. ALCOCK	North Amherst.
Laboratory Assistant in Animal Nutrition.	
HARRY L. ALLEN	89 Main Street.
Laboratory Assistant in Chemistry.	
JOHN G. ARCHIBALD, M.Sc.	North Amherst.
Assistant Research Professor of Chemistry.	
THEODORE T. AYERS, B.Sc.	Inwood.
Investigator in Botany.	
JOHN S. BAILEY, M.Sc.	13½ Amity Street.
Investigator in Pomology.	
ALYN S. BALL	94 Main Street.
Laboratory Assistant in Botany.	
ARTHUR B. BEAUMONT, Ph.D.	51 Amity Street.
Professor of Agronomy and Head of Department.	
ARTHUR I. BOURNE, B.A.	12 East Pleasant Street.
Assistant Research Professor of Entomology.	
LEON A. BRADLEY, Ph.D.	North Amherst.
Assistant Research Professor of Microbiology.	
ALEXANDER E. CANCE, Ph.D.	9 Fearing Street.
Professor of Agricultural Economics and Head of Department.	
WALTER W. CHENOWETH, M.Sc.	North Amherst.
Professor of Horticultural Manufactures and Head of Department.	
ORTON L. CLARK, B.Sc.	12 College Street.
Assistant Professor of Botany.	
WALTER L. CUTLER	North Pleasant Street.
Laboratory Assistant in Pomology.	
WILLIAM L. DORAN, M.Sc.	16 Nutting Avenue.
Assistant Research Professor of Botany.	
F. ETHEL FELTON, B.A.	The Davenport.
Editorial Assistant.	
HENRY T. FERNALD, Ph.D.	44 Amity Street.
Professor of Entomology and Head of Department.	
JAMES A. FOORD, M.Sc.Agr.	54 Lincoln Avenue.
Professor of Farm Management and Head of Department.	
HENRY J. FRANKLIN, Ph.D.	East Wareham.
Research Professor in charge of Cranberry Station.	
GEORGE E. GAGE, Ph.D.	The Davenport.
Professor of Animal Pathology and Head of Department of Veterinary Science and Animal Pathology.	

14		P.D. 31.
EDWIN F. GASKILL, B.Sc.	Assistant to the Director.	North Pleasant Street.
GERALD M. GILLIGAN, B.Sc.	Investigator in Chemistry.	9 Phillips Street.
JOHN C. GRAHAM, B.Sc.	Professor of Poultry Husbandry and Head of Department.	68 Lincoln Avenue.
EMIL F. GUBA, Ph.D.	Assistant Research Professor of Botany.	Waltham.
CHRISTIAN I. GUNNESS, B.Sc.	Professor of Rural Engineering and Head of Department.	105 Butterfield Terrace.
FRANK A. HAYS, Ph.D.	Research Professor of Poultry Husbandry.	Oneacre.
EDWARD B. HOLLAND, Ph.D.	Research Professor of Chemistry.	28 North Prospect Street.
LORIAN P. JEFFERSON, M.A.	Assistant Research Professor of Agricultural Economics.	The Davenport.
CARLETON P. JONES, M.Sc.	Assistant Research Professor of Chemistry.	8 Nutting Avenue.
JOHN P. JONES, M.Sc.	Assistant Research Professor of Agronomy.	Tillson Court.
HENRY F. JUDKINS, B.Sc.	Professor of Dairying and Head of Department.	103 Butterfield Terrace.
DONALD S. LACROIX, B.Sc.	Investigator in Agriculture.	East Wareham.
JOSEPH B. LINDSEY, Ph.D.	Vice Director, Goessmann Professor of Agricultural Chemistry, and Head of Department.	47 Lincoln Avenue.
CHARLES E. MARSHALL, Ph.D.	Professor of Microbiology and Head of Department.	10 South Prospect Street.
GLADYS I. MINER	Curator, Department of Botany.	7 Nutting Avenue.
FRED W. MORSE, M.Sc.	Research Professor of Chemistry.	40 Pleasant Street.
A. VINCENT OSMUN, M.Sc.	Professor of Botany and Head of Department.	16 Northampton Road.
JOHN E. OSTRANDER, A.M., C.E.	Meteorologist.	33 North Prospect Street.
NORMAN J. PYLE, V.M.D.	Assistant Research Professor of Avian Pathology.	24 Cottage Street.
RUBY SANBORN, A.B.	Investigator in Poultry Husbandry.	45 Pleasant Street.
FRED C. SEARS, M.Sc.	Professor of Pomology and Head of Department.	Mount Pleasant.
JACOB K. SHAW, Ph.D.	Research Professor of Pomology.	5 Farview Way.
VICTOR A. TIEDJENS, M.Sc.	Assistant Research Professor of Vegetable Gardening.	Waltham.
FRANK A. WAUGH, M.Sc.	Head of Division of Horticulture.	Campus.
WARREN D. WHITCOMB, B.Sc.	Assistant Research Professor of Entomology.	Waltham.

Research Staff employed on Purnell Funds.

ARTHUR W. PHILLIPS, A.M.	Assistant Research Professor of Dairying.	12 Nutting Avenue.
RUTH E. SHERBURNE, B.Sc.	Laboratory Assistant in Agricultural Economics.	87 Pleasant Street.
HUBERT W. YOUNT, M.Sc.	Assistant Research Professor of Agricultural Economics.	39 Main Street.

Control Service Staff.

PATRICK E. BRANSFIELD, B.A. Analyst.	14 Nutting Avenue.
GEORGE B. DALRYMPLE Analyst.	29 Main Street.
WILBERT D. FIELD, B.Sc. Collector of Blood Samples.	Baker Place.
HENRI D. HASKINS, B.Sc. Official Chemist, Fertilizer Control.	Easthampton.
JAMES T. HOWARD Inspector.	7 Phillips Street.
FRANK J. KOKOSKI, B.Sc. Analyst.	Northampton Road.
Mrs. LEILA PRESCOTT Analyst.	Pelham Road.
HAROLD F. ROWLEY, B.Sc. Technical Assistant.	15 Hallock Street.
PHILIP H. SMITH, M.Sc. Official Chemist, Feed Control.	102 Main Street.
LEWELL S. WALKER, B.Sc. Assistant Official Chemist, Fertilizer Control.	19 Phillips Street.

Extension Service Staff.

EDWARD M. LEWIS, A.M. Dean and Acting President of the College.	President's House.
JOHN D. WILLARD, M.Sc. Director.	31 Lincoln Avenue.
FAYETTE H. BRANCH, B.Sc. Extension Professor of Farm Management.	31 East Pleasant Street.
WILLIAM R. COLE Assistant Extension Professor of Horticultural Manufactures.	Fearing Street.
GEORGE L. FARLEY, M.Sc. State Leader of County Club Agents.	61 Amity Street.
CLIFFORD J. FAWCETT, B.Sc. Extension Professor of Animal Husbandry.	70 Lincoln Avenue.
MAY E. FOLEY, M.A. Assistant Extension Professor of Nutrition.	87 Pleasant Street.
ROBERT D. HAWLEY, B.Sc. Supervisor of Correspondence Courses and Extension Courses at the College.	South Amherst.
WILLIAM F. HOWE Assistant State Leader of County Club Agents.	North Amherst.
RAY M. KOON, M.Sc. Extension Professor of Vegetable Gardening; in charge of Market Garden Field Station, Waltham.	Bedford.
WILLIAM P. B. LOCKWOOD, M.Sc. Extension Professor of Dairying.	51 Cornhill, Boston.
ROBERT J. McFALL, Ph.D. Extension Professor of Agricultural Economics.	20 Spring Street.
WILLIAM C. MONAHAN, B.Sc. Extension Professor of Poultry Husbandry.	8 Kellogg Avenue.
EARLE H. NODINE, B.Sc. Extension Instructor in charge of Poultry Club Work.	21 Woodside Avenue.
SUMNER R. PARKER, B.Sc. State Leader of County Agricultural Agents.	South Amherst.
RALPH W. REDMAN, B.Sc. Assistant Director.	3 Hallock Street.
LUCILE W. REYNOLDS, B.Sc. State Leader of County Home Demonstration Agents.	7 Nutting Avenue.

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WILBUR H. THIES, M.Sc.	16 North Prospect Street.	
Assistant Extension Professor of Pomology.		
MARION L. TUCKER, B.Sc.	87 Pleasant Street.	
Assistant Extension Professor of Home Economics.		
HARRIET M. WOODWARD, B.Sc.	87 Pleasant Street.	
Assistant State Leader of County Club Agents.		

Extension Professor of Agronomy.

Extension Editor.

The Library Staff.

BASIL B. WOOD, A.B.	6 Boltwood Avenue.
Librarian.	
LENA V. CHAPMAN	77 South Pleasant Street.
Assistant in charge of circulation.	
KATHARINE POWELL	9 Amity Street.
Department Librarian.	
BESSIE M. WEYMOUTH	116 Pleasant Street.
Cataloguer.	

Library Assistant.

Other Officers.

BALDASSAROS E. A. BOVENZI	61 Amity Street.
Engineer.	
JOHN K. BROADFOOT	130 Pleasant Street.
Assistant to the Treasurer.	
AVIS P. CHRISTOPHER	Infirmary.
Resident Nurse.	
LAWRENCE S. DICKINSON, B.Sc.	2 Farview Way.
Superintendent of Grounds.	
LULU DIETHER	Draper Hall.
Manager of the Dining Hall.	
SAMUEL C. HUBBARD	North Amherst.
Foreman Department of Floriculture.	
CLARENCE A. JEWETT	112 Pleasant Street.
Superintendent of Buildings.	
JOHN J. LEE	38 Cottage Street.
Assistant to the Military Detail.	
MRS. MARY MACRAE	Infirmary.
Matron.	
MRS. MARIE B. MARSH	Abigail Adams House.
Matron.	
URAL V. MARTIN	79 Main Street.
Curator, Goessmann Laboratory.	
WILLIAM E. MARTIN	5 Phillips Street.
Laboratory Assistant, Department of Horticultural Manufactures.	
ENOS J. MONTAGUE, B.Sc.	Campus.
Farm Superintendent.	
ADELBERT SHEFFIELD	North Amherst.
Superintendent of Dairy Manufactures.	

Graduate Assistants.

FREDERICK S. BARTLETT, B.Sc.	88 Pleasant Street.
Department of Chemistry.	
MARTIN E. CUPERY, A.B.	The Davenport.
Department of Chemistry.	
CLIFFORD O. GATES, B.S.A.	9 Fearing Street.
Department of Landscape Gardening.	

Part II.	17
HOVANES GARABEDIAN, B.A.	Mount Pleasant.
Department of Chemistry.	
LESTER M. HOLBROOK, B.Sc.	84 Pleasant Street.
Department of Agricultural Economics.	
OLIVER W. KELLY, B.Sc.	North Amherst.
Department of Agronomy.	
DAVID MOXON, B.Sc.	Kappa Epsilon.
Department of Microbiology.	
KNUTE W. NIELSON, B.Sc.	53 Lincoln Avenue.
Department of Agriculture.	
GORDON P. PERCIVAL, B.Sc.	90 Pleasant Street.
Department of Chemistry.	
CHARLES F. ROSS, B.Sc.	88 Pleasant Street.
Department of Entomology.	
ALWYN C. SESSIONS, B.Sc.	Oneacre.
Department of Agronomy.	
FOSTER H. WEISS, B.Sc.	85 Pleasant Street.
Department of Vegetable Gardening.	
GUS C. WOFFORD, B.Sc.	83 Pleasant Street.
Department of Landscape Gardening.	

STANDING COMMITTEES OF THE FACULTY.

1925-1926.

Commencement.

Professor THAYER.
 Treasurer KENNEY.
 Secretary WATTS.
 Mr. S. R. PARKER.
 Asst. Professor CLARK.

Course of Study.

Acting President LEWIS.
 Professor WAUGH.
 Professor FERNALD.
 Professor OSTRANDER.
 Professor MARSHALL.
 Professor CHAMBERLAIN.
 Professor FOORD.
 Professor WELLES.
 Professor JULIAN.

Discipline.

Professor MACKIMMIE.
 Acting Dean MACHMER.
 Professor CHENOWETH.
 Professor HICKS.
 Professor GUNNESS.

Employment.

Professor JUDKINS.
 Treasurer KENNEY.
 Secretary WATTS.
 Professor THAYER.

Academic Activities Board.

Professor WAUGH.
 Acting Dean MACHMER.

Entrance Examinations and Admission.

Acting Dean MACHMER.
 Professor PATTERSON.
 Professor OSMUN.
 Professor ASHLEY.
 Professor GLICK.

Health and Sanitation.

Professor MARSHALL.
 Treasurer KENNEY.
 Professor GAGE.
 Professor HICKS.
 Miss SKINNER.

Library.

Professor MARSHALL.
 Professor PATTERSON.
 Professor CANCE.
 Mr. WOOD.

Scholarship.

Acting President LEWIS.
 Acting Dean MACHMER.
 Professor PETERS.
 Professor MACKIMMIE.
 Professor PATTERSON.
 Asst. Professor RAND.
 Asst. Professor TORREY.
 Asst. Professor RICE.

Student Life.

Professor THAYER.
 Secretary WATTS.
 Professor SEARS.
 Professor MACKIMMIE.
 Director VERBECK.
 Professor HICKS.

Athletic Board.

Acting Dean MACHMER.
 Professor OSMUN.
 Asst. Professor RICE.

ADMISSION.

A. APPLICATION FOR ADMISSION.

Correspondence concerning admission should be addressed to the registrar.

Every applicant for admission to the college must be at least sixteen years old, and must present to the registrar proper testimonials of character, which, whenever possible, should come from the principal of the school at which the applicant has prepared for college. Candidates who desire to present themselves for examination in any subjects must make application to the college for such privilege at least one month before the date of the examination. Blanks for such application may be obtained by addressing the registrar of the college. All entrance credentials must be in the hands of the registrar before the applicant can matriculate.

B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon certificate or upon examination. No *diploma* from a secondary school will be accepted.

CERTIFICATES. — The Massachusetts Agricultural College is affiliated with the New England College Entrance Certificate Board. Therefore certificates of admission will be accepted from schools approved by the Board. Certificates of admission will also be accepted from any Massachusetts school listed as class "A" by the State Department of Education, but not included in the approved lists of the New England College Entrance Certificate Board. Principals of schools in New England who desire the certificate privilege should address the secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn. Certificates from schools outside of New England may be received if those schools are on the approved list of the leading colleges of the section in which the school in question is located.

The credentials of the Board of Regents of the State of New York are accepted as satisfying the entrance requirements of this college when offered subject for subject.

Certificates in order to be accepted must present in the prescribed and restrictive elective groups at least three of the necessary fourteen and one-half credits. It is to be understood, however, that responsibility for certification in either elementary French, elementary German, English 1 or English 2, Latin A, Greek A or algebra must be assumed by one school, if the candidate has received his preparation in any one subject named above in more than one school. Subjects lacking on certificate (except for the permitted number of conditions) must be made up at the time of the examinations for admission.

SPECIAL CERTIFICATE ARRANGEMENT FOR STUDENTS FROM AGRICULTURAL SCHOOLS. — Superior graduates of Vocational Schools of Agriculture in Massachusetts may be accepted for the Degree of Vocational Agriculture provided:

(a) they are unqualifiedly recommended by the Vocational Division of the State Department of Education;

(b) that they can present at least $14\frac{1}{2}$ units of certified entrance credits.

Graduates of Vocational Agricultural Departments in Massachusetts High Schools may be admitted to the same degree course provided they present $14\frac{1}{2}$ certified units of work. At least $7\frac{1}{2}$ units must be in subjects listed in the "pre-

scribed" and "restricted elective" groups certified to by the High School Principal in the regular way. The other 7 units will be accepted for work done in the Agricultural Department and approved both as to quality and quantity by the State Department of Vocational Education.

Blank forms for certification — sent to principals or school superintendents only — may be obtained on application to the registrar of the college.

EXAMINATIONS. — The examination in each subject may be oral or written, or both. The standard required for passing an examination for admission is 65 per cent. Conditions to the amount of two units will be allowed.

Entrance examination for admission to the Massachusetts Agricultural College will be held at the following centers: —

In June Amherst, Stockbridge Hall.
Massachusetts Institute of Technology,
Cambridge, Mass.
Worcester, Worcester Polytechnic Institute.

In September Amherst, Stockbridge Hall.

Please note that September examinations are held in Amherst only.

Schedule for Entrance Examinations June 17–19, 1926.

First Day.

8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, general, United States and Civics).

Second Day.

8.30 A.M. English 1 and 2.
11.30 A.M. Botany.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Third Day.

8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

Schedule for Entrance Examinations September 8–11, 1926.

First Day.

1.15–5.00 P.M. Greek, elementary and intermediate.

Second Day.

8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, general, United States and Civics).

Third Day.

8.30 A.M. English 1 and 2.
11.30 A.M. Botany.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Fourth Day.

8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

C. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-year high school course, or its equivalent, and are stated in terms of units. The term unit means the equivalent of at least four recitations a week for a school year.

Fourteen and one-half units must be offered for admission in accordance with the entrance requirements as stated below. Entrance credits gained either by certificate or by examination will hold good for one year.

Entrance Requirements.

1. *Prescribed.* — The following units are prescribed: —

English 1	1½
English 2	1½
A foreign language	2
Algebra	1½
Plane geometry	1
	7½

2. *Restricted Electives.* — Three units to be selected from —

Science	1, 2 or 3
History (American history and civics included)	1, 2 or 3
A second foreign language	2 or 3
Additional work, in first foreign language	1 or 2

3. *Free Margin.* — Free margin of four units to consist of any substantial work (including agriculture, general science and a fourth year of English) for which credit of not less than one-half unit earned in one year is given toward a secondary school diploma.

“Units presented in the free margin group in subjects not included in the examination schedule may be offered only by certificate.”

4. One unit of history must be offered in either the restricted electives or the free margin.

5. If elementary algebra and plane geometry are counted as three units, the total requirement will be fifteen units.

6. Both the credits under the prescribed group and the restricted elective group must be presented either by certificate from an approved school or by examination, or by a combination of both.

The following is a list of subjects in which the entrance credits must be offered in the prescribed and restricted elective groups: —

Mathematics and Science.

Botany ¹	½ or 1
Chemistry ¹	1
Algebra	1½
Plane geometry	1
Solid geometry	½
Trigonometry	½
Physics ¹	1
Geology	½
Physical geography	½
Physiology	½
Zoölogy ¹	½

¹ NOTE-BOOKS. — The keeping of a note-book is required as part of the preparation in those subjects indicated. Candidates presenting themselves for examination in such subjects must present at the same time a statement signed by the Principal to the effect that a satisfactory note-book has been kept by the candidate.

History.

Ancient	1
Medieval and modern	1
English	1
General	1
United States and civics	1

English.

English 1	1½
English 2	1½

Foreign Language.

Elementary French	2
Elementary German	2
Elementary Spanish	2
Elementary Latin	2
Elementary Greek ¹	2
Intermediate French	1
Intermediate German	1
Intermediate Spanish	1
Intermediate Latin	1
Intermediate Greek ¹	1
Advanced French	1
Advanced German	1
Advanced Spanish	1
Advanced Latin	1

No applicant deficient in both algebra and plane geometry will be admitted.

D. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION.

AGRICULTURE. — Entrance credit in agriculture is granted on the following basis: —

I. The Massachusetts Agricultural College accepts a maximum of four credits in agriculture from any secondary or county agricultural high school in Massachusetts offering work in that subject, provided evidence of such work having been done is submitted on a principal's statement, as is indicated in the "free margin" group.

II. In high schools organizing agricultural club work under the supervision and rules of the junior extension service of the college, one credit is granted for each full year of work performed under the following plan: —

Work of the Winter Term. — (a) The study of textbooks such as are suitable for secondary school instruction in agriculture.

(b) Course of Study: A general outline of suggested topics for study.

(c) Visits by a representative of the Massachusetts Agricultural College for observation, counsel and advice in regard to kind and amount of work being done in agriculture.

(d) Formation of an agricultural club with officers from among its own members, meeting once a month under local supervision of some one authorized to act for the school authorities.

Work of the Spring Term. — Same in general form as winter term.

Work of the Summer Term. — An approved project conforming to the rules of some one or more of the agricultural clubs of the junior extension service of the Massachusetts Agricultural College.

Work of the Fall Term. — (a) An exhibit of work.

(b) Reports and story of achievement submitted to the junior extension service of the college.

The maximum number of credits in agriculture is four.

¹ Examination in September only.

BOTANY. — For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent, will be accepted. This work should occupy one school year and include laboratory and supplementary textbook study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Stevens' "Introduction to Botany" and Bergen & Davis' "Principles of Botany." A note-book, containing neat, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit, and this note-book must be presented by all applicants for admission upon examination in this subject. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

CHEMISTRY. — The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from any standard textbook, with laboratory work on the properties of the common elements and their simpler compounds. No particular work is prescribed. The keeping of a note-book is required.

Students who do not take chemistry in the preparatory school begin the subject in college, and are required to do extra work during the first two terms, as outlined under chemistry, courses 1 and 2, pages 65 and 66.

MATHEMATICS. — (a) *Required.* — Algebra: The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending upon quadratic equations; the binomial theorem for positive integral exponents, the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Plane Geometry: The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective.* — Solid Geometry: The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

Plane Trigonometry: A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

PHYSICS. — To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work must consist of both classroom work and laboratory practice. The work covered in the class-room should be equal to that outlined in Hall & Bergen's "Textbook of Physics" or Millikan & Gale; the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory note-book. This note-book, certified by the instructor in the subject, must be submitted by each candidate presenting himself for examination in physics; credit for passing the subject will be given on laboratory notes and on the examination submitted. Candidates entering on certificate will not be required to present note-books, but the principal's certification must cover laboratory as well as class-room work.

PHYSIOLOGY. — Hough & Sedgwick's "The Human Mechanism;" Martin's "The Human Body; Briefer Course."

ZOOLOGY, PHYSICAL GEOGRAPHY, GEOLOGY. — The following suggestions are made concerning preparation for admission in the subjects named above: —

For physiography, Davis' "Elementary Physical Geography;" Gilbert & Brigham's "Introduction to Physical Geography." For zoology, textbooks entitled "Animals" or "Animal Studies," by Jordan, Kellogg and Heath; Linville & Kelley's "A Textbook in General Zoology." For geology, A. P. Brigham's "A Textbook of Geology" or Tarr's "Elementary Geology."

Applicants for examination in zoology are *required* to present certified laboratory note-books; applicants for examination in the other subjects are *advised* to present note-books, if laboratory work has been done. Good note-books may be given credit for entrance. Examination in these subjects will be general, in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

HISTORY. — The required unit must be offered in either ancient history, medieval and modern history, English history, general history, or United States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that no unit be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good textbooks, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on outline maps.

To indicate in a general way the character of the textbook work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Myers or Fisher, in general history; Fiske, together with MacLaughlin or Montgomery, in United States history and civics.

ENGLISH. — The study of English in school has two main objects, which should be considered of equal importance: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence and appreciation, and the development of the habit of reading good literature with enjoyment.

(1) *Grammar and Composition* (One and One-half Units). — The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, sentences and paragraphs should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise letter-writing, narration, description and easy exposition and argument. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge and studies other than English, as well as from his reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in his recitations and various exercises, whether oral or written.

(2) *Literature* (One and One-half Units). — The second object is sought by means of two lists of books, headed, respectively, "Reading" and "Study," from which may be framed a progressive course in literature covering four years. In connection with both lists the student should be trained in reading aloud and encouraged to commit to memory some of the more notable passages both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads and with their place in literary history.

A. *Books for Reading*. — The aim of this course is to foster in the student the

habit of intelligent reading and to develop a taste for good literature by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

The books provided for reading are arranged in the following groups, from each of which at least two selections are to be made, except that for any book in Group I a book from any other may be substituted.

Group I. Classics in Translation.

The "Old Testament," at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther.

The "Odyssey," with the omission, if desired, of Books I-V, XV and XVI.

The "Æneid."

The "Odyssey" and the "Æneid" should be read in English translations of recognized literary excellence.

Group II. Drama.

Shakespeare: "Merchant of Venice," "As You Like It," "Julius Cæsar."

Group III. Prose Fiction.

Dickens: "A Tale of Two Cities."

George Eliot: "Silas Marner."

Scott: "Quentin Durward."

Hawthorne: "The House of the Seven Gables."

Group IV. Essays, Biography, etc.

Addison and Steele: "The Sir Roger de Coverley Papers."

Irving: "The Sketch Book," selections covering about 175 pages.

Macaulay: "Lord Clive."

Parkman: "The Oregon Trail."

Group V. Poetry.

Tennyson: "The Coming of Arthur," "Gareth and Lynette," "Lancelot and Elaine," "The Passing of Arthur."

Browning: "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Hervé Riel," "Pheidippides," "My Last Duchess," "Up at a Villa — Down in the City," "The Italian in England," "The Patriot," "The Pied Piper," "De Gustibus," "Instans Tyrannus."

Scott: "The Lady of the Lake."

Coleridge: "The Ancient Mariner."

Arnold: "Sohrab and Rustum."

B. Books for Study. — This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions.

The books provided for study are arranged in four groups, from each of which one selection is to be made.

Group I. Drama.

Shakespeare: "Macbeth," "Hamlet."

Group II. Poetry.

Milton: "L'Allegro," "Il Penseroso," "Comus."

Book IV of Palgrave's "Golden Treasury" (first series), with special attention to Wordsworth, Keats and Shelley.

Group III. Oratory.

Burke: "Speech on Conciliation with America."

Washington's "Farewell Address," Webster's "First Bunker Hill Oration," and Lincoln's "Gettysburg Address."

Group IV. Essays.

Macaulay: "Life of Johnson."

Carlyle: "Essay on Burns," with a brief selection from Burns' poems.

Examination. — However accurate in subject-matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

The examination will be divided into two parts, one of which will be on grammar and composition, and the other on literature.

In grammar and composition, the candidate may be asked specific questions upon the practical essentials of these studies, such as the relation of the various parts of a sentence to one another, the construction of individual words in a sentence of reasonable difficulty, and those good usages of modern English which one should know in distinction from current errors. The main test in composition will consist of one or more essays, developing a theme through several paragraphs; the subjects will be drawn from the books read, from the candidate's other studies and from his personal knowledge and experience quite apart from reading.

The examination in literature will include: —

(a) General questions designed to test such a knowledge and appreciation of literature as may be gained by fulfilling the requirements defined under "A, Reading," above.

(b) A test on the books prescribed for study, which will consist of questions upon their content and structure, and upon the meaning of such words, phrases and allusions as may be necessary to an understanding of the works and an appreciation of their salient qualities of style. General questions may also be asked concerning the lives of the authors, their works and the periods of literary history to which they belong.

FRENCH. — Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission). — For a third credit unit in French as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in French will be given unless the candidate has presented elementary French on certificate, or has written the examination in elementary French.

No examination for a fourth credit in French will be given unless the candidate has presented both elementary and intermediate French upon certificate, or has written the examination in both elementary and intermediate French.

GERMAN. — Elementary: The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission). — For a third credit unit in German as an elective subject for entrance, when required units have been offered in German, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in German will be given unless the candidate has presented elementary German upon certificate, or has written the examination in elementary German.

No examination for a fourth credit in German will be given unless the candidate has presented both elementary and intermediate German upon certificate, or has written the examination for both elementary and intermediate German.

SPANISH. — *Elementary*: The necessary preparation for this examination is stated in the description of the two-year course in elementary Spanish recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year Spanish (elective subjects for admission). — For a third credit unit in Spanish as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in Spanish will be given unless the candidate has presented elementary Spanish on certificate, or has written the examination in elementary Spanish.

No examination for a fourth credit in Spanish will be given unless the candidate has presented both elementary and intermediate Spanish upon certificate, or has written the examination in both elementary and intermediate Spanish.

GREEK. — *Elementary*. — Greek grammar and composition: Translation into Greek of short sentences illustrating common principles of syntax.

The examination in grammar and prose composition will be based on the first four books of Xenophon's "Anabasis."

Intermediate. — Homer's "Iliad," Books I and II (omitting Book II, 494 to end), and the Homeric forms, constructions, idioms and prosody.

Prose composition, consisting of continuous prose based on Xenophon, and other Attic prose of similar difficulty.

Translation of passages of Homer at sight.

The examinations in Greek, elementary and intermediate, will be given in September only.

LATIN. — *Elementary*. — Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from Cæsar's "Gallic War," covering at least four books, and (b) the translation of passages of Latin prose at sight.

Intermediate. — Cicero (third oration "Against Catiline" and the orations "For Archias" and "For Marcellus") and sight translation of prose.

Advanced. — Vergil (*Æneid*, II, III and VI) and sight translation of poetry.

E. ADMISSION TO ADVANCED STANDING.

Candidates for admission to advanced standing, in addition to meeting the regular entrance requirements, must also pass examinations in those subjects already pursued by the class they desire to enter. To meet this requirement, a student transferring to this college from another college or university of recognized standing must present the following credentials: —

1. A letter of honorable dismissal from the institution with which he has been connected.
2. A statement or certificate of his entrance record.
3. A statement from the proper officer showing a complete record of his work while in attendance.
4. A marked catalogue showing the courses pursued.
5. A statement from the proper officer, giving the total number of credits required for graduation by the institution from which the applicant is transferring, and, of this total, the number that the applicant has satisfactorily completed at the time of transfer.

These credentials should be presented to the registrar. Applications will be judged wholly on their merits and the college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

F. OTHER INFORMATION ABOUT ENTRANCE.

1. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable. (It is immaterial whether the pupil has entered by certificate or by examination.)

2. The examination in each subject may be either oral or written, or both. The standard required for passing an entrance examination is 65 per cent.

3. To matriculate, candidates must offer twelve and one-half of the fourteen and one-half units required for admission, and will be conditioned in those subjects not passed. At least five and one-half credits must be in the prescribed group. No candidate deficient in both algebra and plane geometry will be admitted.

4. Examinations for the removal of entrance conditions will be held during the first week of the second term.

5. Credits for entrance requirements, whether gained by certificate or by examination, will hold good for one year.

6. Examinations in part of the subjects required for entrance may be taken one year before entering college.

7. For information concerning expenses, scholarships, etc., see "General Information."

8. For information concerning admission to short courses, see "Short Courses."

9. Application for admission as a "Special Student" should be made to the Dean.

COURSES OF INSTRUCTION.

FRESHMAN YEAR.

TABLE OF FRESHMAN SUBJECTS.

[Groups A and B of each term are required of all Freshman men; groups A and C of all Freshman women. For details, see the following tables of the first, second, and third terms, and the description of the courses.]

First Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 1	3	—	3
Chemistry 1	3	4	5
or			
Chemistry 4	2	4	4
English 1	3	—	3
Language 1 or 4 (French or German)	3	—	3
Mathematics 1 (Algebra)	4	—	4
Group B; for men:			
Military 1 (or Physical Education 7)	—	3	2
Physical Education 1	1	—	1
Physical Education 2	—	2	1
Group C; for women:			
Rural Home Life 1	2	—	2
Physical Education 4	—	3	2

Second Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 2	3	—	3
Chemistry 2	3	4	5
or			
Chemistry 5	2	4	4
English 2	3	—	3
Language 2 or 5 (French or German)	3	—	3
Mathematics 2 (Higher Algebra)	3	—	3
or			
Mathematics 3 (Solid Geometry)	3	—	3
Mathematics 4 (Mensuration)	2	—	2
Group B; for men:			
Military 2 (or Physical Education 8)	—	3	2
Group C; for women:			
Physical Education 5	—	3	2

Third Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 3	3	-	3
Botany 3	2	4	4
English 3	3	-	3
Language 3 or 6 (French or German)	3	-	3
Mathematics 5 (Trig.)	3	-	3
Group B; for men:			
Military 3 (or Physical Education 9)	-	3	2
Physical Education 3	-	2	1
Group C; for women:			
Physical Education 6	-	3	2
Agriculture 6	2	-	2

SOPHOMORE YEAR.

TABLE OF SOPHOMORE SUBJECTS.

[Groups A and B of each term are required of all Sophomore men; groups A and C, of all Sophomore women. In addition one of the "Divisional Elective Groups" is to be elected as a unit by each Sophomore. For details, see the following tables of the first, second, and third terms, and the description of the courses.]

First Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Botany 25	1	4	3
English 25	2	-	2
English 28	1	-	1
Physics 25	3	2	4
Group B; for men:			
Military 25 (or Physical Education 30)	-	3	2
Physical Education 25	-	2	1
Group C; for women:			
Physical Education 27	-	5	3
<i>Divisional Elective Groups.</i>			
Agriculture:			
Animal Husbandry 25	2	2	3
Agronomy 25	2	4	4
Horticulture:			
Chemistry 25	1	4	3
or			
Drawing 25	-	8	4
Horticulture 25	1	4	3
Science:			
Modern Language (French or German)	3	-	3
Chemistry 25	1	4	3
Rural Social Science:			
Economic Sociology 25	5	-	5
Rural Home Life:			
Landscape Gardening 30	-	6	3
Rural Home Life 28	1	6	4

Second Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
English 26	2	—	2
English 29	1	—	1
Zoology 26	2	4	4
Group B; for men:			
Military 26 (or Physical Education 31)	—	3	2
Group C; for women:			
Physical Education 28	—	3	2
<i>Divisional Elective Groups.</i>			
Agriculture:			
Animal Husbandry 26	2	2	3
Chemistry 30	3	4	5
Physics 26	3	2	4
Horticulture:			
Physics 26	3	2	4
Horticulture 26	1	4	3
Agricultural Economics 26	4	2	5
Science:			
Modern Language (French or German)	3	—	3
Physics 26	3	2	4
Chemistry 26	1	4	3
Rural Social Science:			
Agricultural Economics 26	4	2	5
Agricultural Education 29	3	—	3
History and Government 25	3	—	3
Landscape Gardening:			
Physics 26	3	2	4
Mathematics 26	3	—	3
Drawing 26	—	6	3
Rural Home Life:			
Chemistry 30	3	4	5
Rural Home Life 29	1	6	4
Rural Home Life 32	—	6	3

Third Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women: English 27	2	—	2
Group B; for men: Military 27 (or Physical Education 32)	—	3	2
Physical Education 26	—	2	1
Group C; for women: Physical Education 29	—	5	3
<i>Divisional Elective Groups.</i>			
<i>Agriculture:</i>			
Agronomy 27	3	2	4
Microbiology 30	—	6	3
Rural Engineering 27	—	4	2
Rural Engineering 30	—	8	4
or			
Physics 27	3	2	4
English 30	1	—	1
History and Government 27	2	—	2
<i>Horticulture:</i>			
Agronomy 27	3	2	4
Entomology 28	2	6	5
Horticulture 27	5	—	5
English 30	1	—	1
History and Government 27	2	—	2
<i>Science:</i>			
Modern Language (French or German)	3	—	3
Physics 27	3	2	4
Entomology 26	5	—	5
or			
Entomology 28	2	6	5
Botany 26	1	6	4
<i>Rural Social Science:</i>			
Rural Sociology 27	3	—	3
Agronomy 27	3	2	4
Entomology 26	5	—	5
English 30	1	—	1
History and Government 27	2	—	2
<i>Landscape Gardening:</i>			
Mathematics 27	—	6	3
Drawing 27	—	8	4
Entomology 28	2	6	5
English 30	1	—	1
History and Government 27	2	—	2
<i>Rural Home Life:</i>			
English 30	1	—	1
Entomology 28	2	6	5
Microbiology 33	3	2	4
Rural Engineering 33	2	4	4
Rural Home Life 33	3	3	4

MAJORS: JUNIOR AND SENIOR YEARS.

GENERAL STATEMENT.

A major consists of 60 credit hours of correlated work, which is arranged by the student and his adviser.

The list of courses found under each major on subsequent pages should not be considered as necessarily a rigid program to be followed. The heads of departments have suggested this series of courses as the best for the average man majoring in their departments. Advisers may, however, make modifications to suit the particular needs of the student, provided these modifications conform precisely to the class schedule as published for the year.

RULES GOVERNING MAJORS.

RULE 1. *Election.* — Each student, before the first term of his junior year, shall elect a major subject from the list of majors given below; and this major shall consist of 60 credit hours of correlated work.

RULE 2. *Minimum Credits.* — The minimum number of credits for graduation shall be 120 junior-senior credit-hours in addition to the satisfactory completion of the required courses of the freshman year and of the required and elective groups of the sophomore year.

RULE 3. *Maximum Credits.* — The maximum number of credits for any term of the junior or senior year shall be 22; the minimum shall be 19.

RULE 4. *Humanities and Rural Social Science.* — A minimum of 18 credit hours in the Divisions of the Humanities and Rural Social Science will be required of all students during their junior and senior years, with the following restriction: that a minimum of 5 credit hours will be required in each of the divisions.

RULE 5. *Advisers.* — The work of each junior and senior will be under the immediate supervision of an instructor designated as major adviser. Ordinarily, the major adviser will be the head of the department in which the student elects his major. The adviser has full authority to prescribe the student's work up to 60 hours. He will, however, so far as practicable, recognize the individual needs of the student. It is also expected that students will seek the counsel of the adviser with respect to the remaining courses required for graduation.

RULE 6. *Free Electives.* — Each student during his junior and senior years is required to take 60 hours in his major and also 18 hours in the Divisions of the Humanities and Rural Social Science, making a total of 78 hours (but see Rule 4). He is allowed free choice of courses to complete his required hours.

RULE 7. *Registration.* — No junior or senior shall register until his major course of study is approved by his adviser.

(1) Course cards for recording the election of majors will be issued from the Schedule Room five weeks before the close of each term.

(2) This card must be submitted by each student to his major adviser, who will lay out the course for the succeeding term and countersign the card.

(3) Each course card must be filled out, giving the name of student, his major, his class and the name and address of parent or guardian. When the major courses have been entered on this card, and the hours of free elections added by the student, the card, accompanied by one hour plan, must be returned to the Schedule Room two weeks before the beginning of the final examination period.

RULE 8. *Change of Major.* — Applications for change of major may be made to the dean in writing at any time; when approved by both major advisers concerned and by the dean and the committee on scholarship, they become operative at the beginning of the term following, provided that no change in the selection of a major may be made by any student after registration day of his senior year.

AGRONOMY. (Major.)

Professor ARTHUR B. BEAUMONT, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agronomy	50 I.	3	I.	Agronomy 50	3	Agronomy 75	5
Agronomy	51 III.	3		Agronomy 75	5	Farm Management 76 . . .	3
Agronomy	75 I.	5		Animal Husbandry 50 . . .	3		
Agronomy	77 II.	5		Chemistry 51	6		
Agronomy	78 II.	3	II.	Agronomy 78	3	Agronomy 77	5
Animal Husbandry . . .	50 I.	3		Chemistry 52	6	Agronomy 78	3
Chemistry	51 I.	6					
Chemistry	52 II.	6					
Farm Management . . .	76 I.	3	III.	Agronomy 51	2	Agronomy 51	3
Farm Management . . .	77 III.	3				Farm Management 77 . . .	3
		40					

ANIMAL HUSBANDRY. (Major.)

Professor ———, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agronomy	50 I.	3	I.	Agronomy 50	3	Animal Husbandry 75 . . .	3
Agronomy ¹	51 III.	3		Animal Husbandry 50 . . .	3	Farm Management 76 . . .	3
Agronomy ¹	77 II.	5		Dairy 50	5	Rural Engineering 75 ¹ . .	5
Animal Husbandry . . .	50 I.	3				Veterinary 75 or 78 . . .	5 or 3
Animal Husbandry . . .	51 II.	3	II.	Animal Husbandry 51 . . .	3	Agronomy 77 ¹	5
Animal Husbandry . . .	52 III.	3		Farm Management 51 . . .	3	Animal Husbandry 76 . . .	3
Animal Husbandry . . .	53 III.	5		Veterinary 50	5	Animal Husbandry 81 . . .	1
Animal Husbandry . . .	75 I.	3				Rural Engineering 78 ¹ . .	5
Animal Husbandry . . .	76 II.	3	III.	Agronomy 51 ¹	3	Veterinary 76 or 79 . . .	5 or 3
Animal Husbandry . . .	77 III.	3		Animal Husbandry 52 . . .	3	Agronomy 51 ¹	3
Animal Husbandry . . .	81 II.	1		Animal Husbandry 53 . . .	5	Animal Husbandry 77 . . .	3
Dairying	50 I.	5		Dairying 52 ¹	5	Farm Management 81 ¹ . .	2
Dairying ¹	52 III.	5				Poultry 78 ¹	5
Farm Management . . .	51 II.	3				Veterinary 77 or 80 . . .	5 or 3
Farm Management . . .	76 I.	3					
Farm Management ¹ . . .	81 III.	2					
Poultry ¹	78 III.	5					
Rural Engineering ¹ . .	75 I.	5					
Rural Engineering ¹ . .	78 II.	5					
Veterinary	50 II.	5					
Veterinary	75 I.	5					
Veterinary	78 I.	3					
Veterinary	76 II.	5					
Veterinary	79 II.	3					
Veterinary	77 III.	5					
Veterinary	80 III.	3					
		82-88 ²					

¹ Suggested, but not required.² Only 60 credit-hours required.

DAIRYING. (Major.)

Professor HENRY F. JUDKINS, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Economics . . .	53 III.	5	I.	Agricultural Education 51 ¹	5	Agricultural Economics 83 ¹	2
Agricultural Economics ¹ . . .	75 II.	5		Animal Husbandry 50 . . .	3	Chemistry 61 . . .	5
Agricultural Economics ¹ . . .	76 II.	5		Chemistry 25 . . .	3	Dairying 75 . . .	3
Agricultural Economics ¹ . . .	83 I.	2		Dairying 50 . . .	5	Dairying 76 . . .	4
Agricultural Economics ¹ . . .	84 III.	2		Dairying 75 . . .	3	Microbiology 82 . . .	5
Agricultural Education . . .	51 I.	5		Dairying 76 . . .	4		
Animal Husbandry . . .	50 I.	3	II.	Dairying 51 . . .	2	Agricultural Economics 75 ¹	5
Animal Husbandry . . .	81 II.	1		Dairying 77 . . .	5	Agricultural Economics 76	5
Chemistry . . .	25 I.	3		Economic Sociology 51 ¹ . . .	5	Animal Husbandry 81 . . .	1
Chemistry . . .	61 I.	5		Microbiology 51 . . .	5	Chemistry 81 . . .	5
Chemistry . . .	81 II.	5		Rural Sociology 51 ¹ . . .	3	Dairying 77 . . .	5
Dairying . . .	50 I.	5		Veterinary Science 50 ¹ . . .	5	Farm Management 51 ¹ . . .	3
Dairying . . .	51 II.	2	III.	Dairying 52 . . .	5	Agricultural Economics 53	5
Dairying . . .	52 III.	5		Dairying 78 . . .	5	Agricultural Economics 84 ¹	2
Dairying . . .	75 I.	3		Economic Sociology 52 ¹ . . .	5	Dairying 78 . . .	5
Dairying . . .	76 I.	4		Rural Engineering 81 ¹ . . .	4		
Dairying . . .	77 II.	5					
Dairying . . .	78 III.	5					
Economic Sociology ¹ . . .	51 II.	5					
Economic Sociology ¹ . . .	52 III.	5					
Farm Management ¹ . . .	51 II.	3					
Microbiology . . .	51 II.	5					
Microbiology . . .	82 I.	5					
Rural Engineering ¹ . . .	81 III.	4					
Rural Sociology ¹ . . .	51 II.	3					
Veterinary Science ¹ . . .	50 II.	5					
		105 ²					

¹ Suggested, but not required.² Only 60 credit-hours required.

FARM MANAGEMENT. (Major.)

Professor JAMES A. FOORD, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agronomy . . .	50 I.	3	I.	Agronomy 50 . . .	3	Animal Husbandry 75 ¹	3
Agronomy ¹ . . .	51 III.	3		Animal Husbandry 50 . . .	3	Farm Management 76 . . .	3
Agronomy . . .	77 II.	5		Dairying 50 . . .	5	Rural Engineering 75 . . .	5
Animal Husbandry . . .	50 I.	3		Pomology 50 . . .	3	Veterinary 75 . . .	5
Animal Husbandry . . .	51 II.	3					
Animal Husbandry ¹ . . .	52 III.	3					
Animal Husbandry . . .	53 III.	5	II.	Animal Husbandry 51 . . .	3	Agronomy 77 . . .	5
Animal Husbandry ¹ . . .	75 I.	3		Farm Management 51 . . .	3	Animal Husbandry 76 ¹	3
Animal Husbandry ¹ . . .	76 I.	3		Pomology 51 . . .	3	Farm Management 78 . . .	1
Animal Husbandry . . .	77 III.	3				Rural Engineering 78 . . .	5
Dairying . . .	50 I.	5					
Dairying ¹ . . .	52 III.	5					
Farm Management . . .	51 II.	3	III.	Agronomy 51 ¹ . . .	3	Agronomy 51 ¹ . . .	3
Farm Management . . .	76 I.	3		Animal Husbandry 52 ¹ . . .	3	Animal Husbandry 77 . . .	3
Farm Management . . .	77 III.	3		Animal Husbandry 53 . . .	5	Farm Management 77 . . .	3
Farm Management . . .	78 II.	1		Dairying 52 ¹ . . .	5	Farm Management 79 . . .	1
Farm Management . . .	79 III.	1		Forestry 58 . . .	3	Farm Management 81 ¹	2
Farm Management ¹ . . .	81 III.	2				Pomology 78 ¹ . . .	3
Forestry . . .	58 III.	3				Poultry 78 ¹ . . .	5
Pomology . . .	50 I.	3				Rural Engineering 79 . . .	5
Pomology . . .	51 II.	3					
Pomology ¹ . . .	78 III.	3					
Poultry ¹ . . .	78 III.	5					
Rural Engineering . . .	75 I.	5					
Rural Engineering . . .	78 II.	5					
Rural Engineering . . .	79 III.	5					
Veterinary . . .	75 I.	5					
		94 ²					

¹ Suggested, but not required.² Only 60 credit-hours required.

POULTRY HUSBANDRY. (Major.)

Professor JOHN C. GRAHAM, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Economics . . .	53 III.	5	I.	Agronomy 50	3	Poultry 75	3
Agronomy	50 I.	3		Animal Husbandry 50	3	Poultry 76	4
Animal Husbandry	50 I.	3		Poultry 50	5	Veterinary 85	3
Farm Management	51 II.	3	II.	Poultry 51	5	Farm Management 51	3
Poultry Husbandry	50 I.	5				Poultry 77	5
Poultry Husbandry	51 II.	5				Veterinary 86	3
Poultry Husbandry	52 III.	5	III.	Agricultural Economics 53	5	Poultry 79	4
Poultry Husbandry	75 I.	3		Poultry 52	5	Veterinary 87	3
Poultry Husbandry	76 I.	4					
Poultry Husbandry	77 II.	5					
Poultry Husbandry	79 III.	4					
Veterinary Science	85 I.	3					
Veterinary Science	86 II.	3					
Veterinary Science	87 III.	3					
		54					

STRONGLY ADVISED. — Microbiology 50 I, Zoölogy 76 II.

FLORICULTURE.

Professor CLARK L. THAYER, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Botany	50 I.	2	I.	Botany 50	2	Floriculture 75	3
Botany	51 II.	2		Floriculture 50	4	Horticulture 50	5
Floriculture	50 I.	4		Floriculture 53	4		
Floriculture	51 II.	4	II.	Botany 51	2	Floriculture 76	3
Floriculture	52 III.	4		Floriculture 51	4	Floriculture 79	3
Floriculture	53 I.	4					
Floriculture	55 III.	3	III.	Floriculture 52	4	Floriculture 77	3
Floriculture	75 I.	3		Floriculture 55	3	Floriculture 80	2-3
Floriculture	76 II.	3				Horticulture 51	5
Floriculture	77 III.	3					
Floriculture	79 II.	3					
Floriculture	80 III.	2-3					
Horticulture	50 I.	5					
Horticulture	51 III.	5					
		47-48					

ADVISED. — The department advises all students who major in this subject to take Entomology 50, Landscape Gardening 75, Botany 78, 79 and 80, and Agricultural Economics 53 and 83.

LANDSCAPE GARDENING. (Major.)

Professor FRANK A. WAUGH, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Floriculture . . .	55 III.	3	I.	Horticulture 50 . . .	5	Landscape Gardening 75 .	3
Horticulture . . .	50 I.	5		Landscape Gardening 50 .	5	Landscape Gardening 76 .	4
Horticulture . . .	51 III.	5		Landscape Gardening 78 .		Landscape Gardening 78 .	
Landscape Gardening .	50 I.	5		or 79	3	or 79	3
Landscape Gardening .	51 II.	4	II.	Landscape Gardening 51 .	4	Landscape Gardening 80 .	4
Landscape Gardening .	52 III.	5				Landscape Gardening 81 .	4
Landscape Gardening .	75 I.	3					
Landscape Gardening .	76 I.	4					
Landscape Gardening .	77 III.	4	III.	Floriculture 55 . . .	3	Landscape Gardening 77 .	4
Landscape Gardening .	78 I.	3		Horticulture 51 . . .	5	Landscape Gardening 82 .	4
Landscape Gardening .	79 I.	3		Landscape Gardening 52 .	5		
Landscape Gardening .	80 II.	4					
Landscape Gardening .	81 II.	4					
Landscape Gardening .	82 III.	4					
		56					

ADDITIONAL INFORMATION. — Modifications may be permitted when they appear advisable.

POMOLOGY. (Major.)

Professor FRED C. SEARS, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Economics .	53 III.	5	I.	Botany 50	2-6	Horticultural Manuf. 75 .	5
Agronomy	77 II.	5		Pomology 50	3	Pomology 75	3
Botany	50 I.	2-6				Pomology 77	3
Horticultural Manufactures .	75 I.	5				Pomology 80	1
Horticultural Manufactures .	76 II.	3	II.	Pomology 51	3	Agronomy 77	5
Pomology	50 I.	3		Pomology 54	3	Horticultural Manuf. 76 .	3
Pomology	51 II.	3				Pomology 76	3
Pomology	52 III.	3				Pomology 81	1
Pomology	54 II.	3	III.	Agricultural Economics 53	5	Pomology 78	3
Pomology	75 I.	3		Pomology 52	3	Pomology 82	1
Pomology	76 II.	3				Rural Engineering 78 .	5
Pomology	77 I.	3					
Pomology	78 III.	3					
Pomology	80 I.	1					
Pomology	81 II.	1					
Pomology	82 III.	1					
Rural Engineering . . .	78 III.	5					
		52-58					

VEGETABLE GARDENING. (Major.)

Professor FRANK A. WAUGH, *Adviser*.

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agronomy	75 I.	5	I.	Agronomy 75	5	Agronomy 75	5
Agronomy	77 II.	5		Botany 50	2	Vegetable Gardening 75	5
Botany	50 I.	2					
Botany	51 II.	2	II.	Agronomy 77	5	Vegetable Gardening 76	5
Vegetable Gardening	52 II.	5		Botany 51	2		
Vegetable Gardening	53 III.	5		Vegetable Gardening 52	5		
Vegetable Gardening	75 I.	5	III.	Vegetable Gardening 53	5	Vegetable Gardening 77	5
Vegetable Gardening	76 II.	5					
Vegetable Gardening	77 III.	5					
		39					

ECONOMIC BOTANY. (Major.)

Professor A. VINCENT OSMUN, *Adviser*.

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Education	56 III.	5	I.	Agronomy 50	3	Botany 58 or 61	3
Agronomy	50 I.	3		Botany 52 or	3	Botany 75 or	5
Botany	52 I.	3		Botany 58 or 61	3	Botany 78	5
Botany	53 II.	3	II.	Chemistry 51	6	Chemistry 80	5
Botany	54 III.	3		English 65	3		
Botany	55 III.	5		French or German 50	3		
Botany	58 I.	3	III.				
Botany	61 I.	3		Botany 53 or	3	Botany 59 or 62	3
Botany	59 II.	3		Botany 59 or 62	3	Botany 76 or	5
Botany	62 II.	3	III.	Chemistry 52	6	Botany 79	3 or 5
Botany	60 III.	3		Entomology 51	3	Chemistry 86	3
Botany	63 III.	3		French or German 51	3	Entomology 90	3
Botany	75 I.	5	III.	Agricultural Education 56	5	Botany 60 or 63	3
Botany	76 II.	5		or		Botany 77 or	5
Botany	77 III.	5		English 52	3	Botany 80	3 or 5
Botany	78 I.	5	III.	Botany 54 or	3	Agricultural Education 56	5
Botany	79 II.	3 or 5		Botany 60 or 63	3		
Botany	80 III.	3 or 5		Botany 55	5		
Chemistry	51 I.	6	III.	French or German 52	3		
Chemistry	52 II.	6		Geology 52	5		
Chemistry	80 I.	5					
Chemistry	86 II.	3					
English	52 III.	3					
English	65 I.	3					
Entomology	51 II.	3					
Entomology	90 II.	3					
French or German	50 I.	3					
French or German	51 II.	3					
French or German	52 III.	3					
Geology	52 III.	5					
		112-116 ¹					

¹ A student is required to select, in consultation with his major adviser, at least 60 credits from this list.

AGRICULTURAL CHEMISTRY. (Major.)

Professor CHARLES A. PETERS, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Chemistry	51 I.	6	I.	Chemistry 51	6	Chemistry 75	6
Chemistry	52 II.	6		Chemistry 61	5	Chemistry 80	5
Chemistry	53 III.	6	II.	Chemistry 52	6	Chemistry 86	3
Chemistry	61 I.	5		Chemistry 62	6	Chemistry 90, 92, 94, 96 . .	5
Chemistry	62 II.	6	III.				
Chemistry	63 III.	5					
Chemistry	75 I.	6		Chemistry 53	6	Chemistry 87	3
Chemistry	80 I.	5		Chemistry 63	5	Chemistry 91, 93, 95, 97 . .	5
Chemistry	86 II.	3					
Chemistry	87 III.	3					
Chemistry	90 II.	5 ¹					
Chemistry	92 II.						
Chemistry	94 II.						
Chemistry	96 II.						
Chemistry	91 III.	5 ¹					
Chemistry	93 III.						
Chemistry	95 III.						
Chemistry	97 III.						
		61					

A knowledge of German is required. Students having had no German previously should elect it at the beginning of the sophomore year.

¹ Students will select one course from groups 90, 92, 94, 96, and 91, 93, 95, 97, respectively.

ECONOMIC ENTOMOLOGY. (Major.)

Professor HENRY T. FERNALD, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Botany	51 II.	4	I.	Chemistry 51 ¹	6	Chemistry 80	5
Chemistry	80 I.	5		Entomology 52	2	Entomology 76	5
Entomology	52 I.	2		Entomology 53	5	Entomology 85	3
Entomology	53 I.	5		Entomology 54	2	Horticulture 50 ¹	5
Entomology	54 I.	2		French or German 50 ¹ . .	3	Zoology 50	3
Entomology	55 II.	4	II.	Botany 51	4	Entomology 77	3
Entomology	56 II.	3		Chemistry 52 ¹	6	Entomology 90	3
Entomology	57 III.	2		Entomology 55	4	Pomology 79 ¹	3
Entomology	65 III.	3		Entomology 56	3	Zoology 51	3
Entomology	75 III.	4		French or German 51 ¹ . .	3		
Entomology	76 I.	5	III.	Entomology 57	2	Entomology 78	4
Entomology	77 II.	3		Entomology 65	3	Geology 52	5
Entomology	78 III.	4		Entomology 75	4	Horticulture 51 ¹	5
Entomology	85 I.	3		Chemistry 53 ¹	6	Pomology 78 ¹	3
Entomology	90 II.	3		French or German 52 ¹ . .	3	Zoology 52	3
Geology	52 III.	5					
Zoology	50 I.	3					
Zoology	51 II.	3					
Zoology	52 III.	3					
		66					

¹ Suggested, but not required.

MICROBIOLOGY. (Major.)

Professor CHARLES E. MARSHALL, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Microbiology . . .	50 I.		I.	Microbiology 50 . . .	5	Microbiology 60 . . .	3
or				Microbiology 60 . . .	3	Microbiology 81 . . .	5
Microbiology . . .	50 II.					Microbiology 82 . . .	5
or			II.	Microbiology 50 . . .	5	Microbiology 61 . . .	3
Microbiology . . .	50 III.	5		Microbiology 51 . . .	5	Microbiology 75 . . .	5
Microbiology . . .	51 II.			Microbiology 61 . . .	3	Microbiology 80 . . .	5
or			III.	Microbiology 50 . . .	5	Microbiology 62 . . .	3
Microbiology . . .	51 III.	5		Microbiology 51 . . .	5	Microbiology 76 . . .	5
Microbiology . . .	52 III.	3		Microbiology 52 . . .	5	Microbiology 83 . . .	5
Microbiology . . .	60 I.	3		Microbiology 62 . . .	3		
Microbiology . . .	61 II.	3					
Microbiology . . .	62 III.	3					
Microbiology . . .	81 I.						
or							
Microbiology . . .	82 I.						
or							
Microbiology . . .	83 III.	5					
Microbiology . . .	80 II.						
or							
Microbiology . . .	75 II.	5					
Microbiology . . .	76 III.	5					
		39					

AGRICULTURAL ECONOMICS. (Major.)

Professor ALEXANDER E. CANCE, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Economics . . .	50 I.	5	I.	Agricultural Economics 50 . . .	5	Agricultural Economics 77 . . .	5
Agricultural Economics . . .	52 II.	5		Agricultural Education 55 . . .	5	Agricultural Economics 79 . . .	5
Agricultural Economics . . .	53 III.	5		English 65	3		
Agricultural Economics . . .	75 II.	5	II.	Agricultural Economics 52 . . .	5	Agricultural Economics 75 . . .	5
Agricultural Economics . . .	76 II.	5		Economic Sociology 51 . . .	5	Agricultural Economics 76 . . .	5
Agricultural Economics . . .	77 I.	5		Rural Sociology 51 ¹ . . .	3		
Agricultural Economics . . .	78 III.	3	III.	Agricultural Economics 53 . . .	5	Agricultural Economics 78 . . .	3
Agricultural Economics . . .	79 I.	5		Economic Sociology 52 . . .	5	Agricultural Economics 87 . . .	3
Agricultural Economics . . .	87 III.	3		Rural Sociology 52 ¹ . . .	3		
Agricultural Education . . .	55 I.	5					
Economic Sociology . . .	51 II.	5					
Economic Sociology . . .	52 III.	5					
English	65 I.	3					
Rural Sociology ¹ . . .	51 II.	3					
Rural Sociology ¹ . . .	52 III.	3					
		65 ²					

¹ Suggested, but not required.² Only 60 credit-hours required.

AGRICULTURAL EDUCATION. (Major.)

Professor WINTHROP S. WELLES, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Education .	51 I.		I.	Agricultural Economics 50	5	Agricultural Education 76	5
or Agricultural Education .	51 II.	5		Agricultural Education 55	5	Agricultural Education 80	1-5
Agricultural Education .	52 I.	5	II.	Agricultural Economics 75	5	Agricultural Education 75	3
Agricultural Education .	55 I.			Agricultural Education 51	5	Agricultural Education 80	1-5
or Agricultural Education .	55 II.	5	III.	Agricultural Economics 53	5	Agricultural Education 77	3
Agricultural Education .	56 II.			Agricultural Education 56	5	Agricultural Education 80	1-5
or Agricultural Education .	56 III.	5					
Agricultural Education .	75 II.	3					
Agricultural Education .	76 I.						
or Agricultural Education .	76 III.	5					
Agricultural Education .	77 III.	3					
Agricultural Education .	79 III.	3					
Agricultural Education .	80 I.						
or Agricultural Education .	80 II.						
or Agricultural Education .	80 III.	1-5					
Agricultural Education .	81 III.	2					
Agricultural Education .	83 III.	2					
Agricultural Education .	85 I.	3					
Agricultural Education .	95 II.	3					
		45-49					

Courses indicated for juniors and seniors are planned for students preparing to teach agriculture. Technical courses in agricultural and additional supporting courses are chosen in conference with the adviser.

ADVISED. — (1) For general teaching program, six of the following courses: 51, 52, 55, 56, 75, 79, 80 and 95.
(b) For extension teaching 51, 55, 76, 77 and 80 or their equivalents.

RURAL SOCIOLOGY. (Major.)

Professor — — —, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Economics .	50 I.	5	I.	Economic Sociology 50	5	Agricultural Economics 50	5
Agricultural Economics .	52 II.	5		Rural Sociology 50	3	Economic Sociology 75	5
Agricultural Economics .	53 III.	5	II.			Rural Sociology 79	1-3
Agricultural Economics .	75 II.	5		Economic Sociology 51	5	Agricultural Economics 52	5
Economics and Sociology .	50 I.	5		Rural Sociology 51	3	Agricultural Economics 75	5
Economics and Sociology .	51 II.	5				Rural Sociology 77	3
Economics and Sociology .	52 III.	5				Rural Sociology 80	1-3
Economics and Sociology .	75 I.	5					
Rural Sociology .	50 I.	3	III.	Economic Sociology 52	5	Agricultural Economics 53	5
Rural Sociology .	51 II.	3		Rural Sociology 52	3	Agricultural Economics 75	5
Rural Sociology .	52 III.	3				Rural Sociology 81	1-3
Rural Sociology .	77 II.	3					
Rural Sociology .	79 I.	1-3					
Rural Sociology .	80 II.	1-3					
Rural Sociology .	81 III.	1-3					
		55-61 ¹					

¹ Only 60 credit-hours required.

RURAL HOME LIFE. (Major.)

Professor EDNA L. SKINNER, *Adviser.*

[The heavy-faced type indicates the term in which the course is given.]

COURSE.	Number.	Credit.	Term.	Junior.	Credit.	Senior.	Credit.
Agricultural Education . .	55 II.	5	I.	Chemistry 80	5	Horticultural Manuf. 80 . .	4
Chemistry	80 I.	5		Economic Sociology 50 . .	5	Rural Home Life 76	4
Economic Sociology	50 I.	5		Rural Home Life 50	5	Rural Home Life 81	3
History and Government . .	27 III.	2	II.	Agricultural Education 55 .	5	Rural Home Life 78	3
Horticultural Manufactures	80 I.	4		Rural Engineering 53	4		
Rural Engineering	53 II.	4					
Rural Home Life	50 I.	5	III.	History and Government 27 .	2	Rural Home Life 83	3
Rural Home Life	52 III.	5		Rural Home Life 52	5		
Rural Home Life	61 III.	3		Rural Home Life 61	3		
Rural Home Life	76 I.	4					
Rural Home Life	78 II.	3					
Rural Home Life	81 I.	3					
Rural Home Life	83 III.	3					
		51					

DESCRIPTION OF COURSES.

DIVISION OF AGRICULTURE.

Professor FOORD.

[Heavy-faced Roman numerals indicate the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Agriculture.

1. **I. 2. II. 3. III.** AGRICULTURE. — Required course for all freshmen. A survey course, tracing the development of man as influenced by agriculture. It considers those problems which our complicated, present-day civilization looks to agriculture to solve, — problems practical, scientific, commercial, sociological. The object of the course is to give to students the agricultural concept, and an appreciation of the close relationship of all lines of human activity to the great problems of agriculture.
3 class hours.

Credit, 3.
Assistant Professor LANPHEAR.

6. **III.** AGRICULTURAL OPPORTUNITIES FOR WOMEN. — For freshman women. Designed to show the woman who is interested in agriculture what opportunities there are for her in that field, and how she may best take advantage of them. The types of agricultural work for which women are best adapted are discussed. A study is made of some of the special problems which confront the woman farmer, and her best ways of solving them.
2 class hours.

Credit, 2.
MISS HAMLIN.

Agronomy.

Professor BEAUMONT, Assistant Professor MICHELS, Assistant Professor LANPHEAR, Mr. THAYER, Mr. STREET.

The courses in agronomy are designed to present the fundamental knowledge concerning the soil and the principal products of the field. The basic course in soils is required of students majoring in the agriculture, horticulture, and rural social science divisions. The electives are designed to meet the needs of those specializing in soils and field crops and other specialized fields including both pure and applied science.

The laboratories for soils and fertilizers include one for elementary work, supplied with locker equipment for 200 students, and one for advanced work, accommodating 80 students. These laboratories are equipped with steam and electric ovens, balances, centrifuge, microscopes and other apparatus necessary for a study of soils and fertilizers. Storerooms, stock rooms, and balance rooms are conveniently near the laboratories. There is also a workroom attached, equipped with power machinery for grinding soils, fodders and the like.

The crops' laboratories include one for seed study, with lockers for 50 students, and a laboratory for the study of cereals, forage crops, roots, etc., with lockers for 64 students. The equipment of these laboratories includes steam ovens, constant temperature electric ovens, ovens for seed germination, Brown-Duval moisture apparatus, balances, microscopes, and collections of seeds, grasses, tubers, weeds, etc. A balance room, root cellar and two storerooms, one of which is mouse-proof, are also used for crop work.

A modern steam-heated greenhouse 25 by 35 feet, used for work in soils and crops, is a valuable part of the equipment. Near the greenhouse is a crop garden on which different varieties of corn, grasses, clovers, etc., are grown for demonstration purposes, and as a source of material for class work. In addition, the general college farm of 250 acres is used for field study in soils and crops, and as a source of material.

Required Courses.

25. **I. AGRONOMY.** — For sophomores. An introductory course designed to acquaint the student with the most important field crops and their production. 2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professor MICHELS and the DEPARTMENT.

27. **III. SOILS AND FERTILIZERS.** — For sophomores. A study of soils and their properties, soil management, methods of soil improvement and maintenance of fertility, including the use of farm manures, commercial fertilizers and soil amendments.

3 class hours.

1 2-hour laboratory period, credit, 4.

Professor BEAUMONT and the DEPARTMENT.

Prerequisite, Freshman-required Chemistry.

Elective Courses.

50. **I. FORAGE CROPS.** — For juniors; seniors may elect. History, classification and production of corn and of those grasses, legumes, root and tuber crops suited to New England conditions. Crops of less importance in New England are briefly considered. The work includes lecture, laboratory and field study. 2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor MICHELS.

Prerequisites, Agronomy 25 and 27, Botany 3.

51. **III. ADVANCED FIELD CROPS (1926-27).** — For juniors and seniors. Study of the cereals and other field crops not taken up or only briefly considered in Course 50. General problems of crop production are also considered, and the work is not entirely confined to New England conditions. The laboratory work includes a study of the cereals, the quality of seeds, grains and crop products, crop problems and field work with such crops as are available. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor MICHELS.

Prerequisite, Agronomy 50.

75. **I. ADVANCED SOILS (1925-26).** — For juniors and seniors. A continuation of studies begun in Agronomy 27 with special emphasis placed on soil classification and adaptability and recent advances in soil science. The field work consists of a detailed study of soil texture and other properties affecting crop adaptability and soil management; accompanied by a laboratory study of the physical properties of the soils sampled. Given in alternate years.

2 class hours.

1 4-hour and 1 2-hour laboratory period, credit, 5.

Professor BEAUMONT.

Prerequisite, Agronomy 27.

77. **II. MANURES AND FERTILIZERS.** — For seniors. An advanced course, giving a general discussion of the different theories which have been held relative to the functions and importance of manures and fertilizers, and leading up to the views at present accepted. Considerable attention is devoted to consideration of the experimental work which has been done, and which is now in progress. The laboratory work consists of a study of fertilizers, fertilizer mixtures, limes and culture work.

3 class hours.

2 2-hour laboratory periods, credit 5.

Professor BEAUMONT and the DEPARTMENT.

Prerequisite, Agronomy 27. Advised, Chemistry 61.

78. **II. BREEDING OF FIELD CROPS (1925-26).**—For juniors and seniors. Deals with the improvement, by selection and breeding, of the crops studied in Course 50. Given in alternate years.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor MICHELS.

Prerequisite, Agronomy 50.

Animal Husbandry.

Professor —, Assistant Professor RICE, Assistant Professor GLATFELTER, Mr. —

It is the purpose of this department to present comprehensive information on the subject of animal husbandry. The first courses are studies of the breeds, types and market classes of live stock. These are followed by courses in judging, breeding and management.

The department is equipped with an excellent laboratory, Grinnell Arena, which has a seating capacity of 180. The equipment for classroom instruction includes upwards of 125 head of dairy cattle which are superior representatives of Jersey, Guernsey, Ayrshire and Holstein breeds; considerable numbers of Berkshire and Chester White pigs; pure-bred Percherons; and several work teams of various types. The department has a collection of plaster of Paris models of individuals of foreign and domestic breeds of horses, cattle, sheep and swine; and a set of over 250 lantern slides portraying the leading prize-winning producing and breeding animals of the principal breeds of horses, cattle, sheep and swine. There is also a collection of the different foodstuffs available for the use of New England farmers. All this equipment is being added to from time to time as funds are available.

Required Courses.

25. **I. LIVESTOCK JUDGING AND MARKET CLASSES OF FARM ANIMALS.**—For sophomores. A study of the principles governing the selection of animals for market, feed lot, breeding, milk production and work, including the use of the score card and the comparative judging of the various types of live stock. Textbook, Vaughn's "Types and Market Classes of Farm Animals."
2 class hours.

1 2-hour laboratory period, credit, 3.

26. **II. TYPES AND BREEDS OF LIVESTOCK.**—For sophomores. A course covering the origin, history, development and characteristics of the different breeds of horses and sheep. Textbook, Plumb's "Types and Breeds of Farm Animals."
2 class hours.

1 2-hour laboratory period, credit, 3.

Prerequisite, Animal Husbandry 25.

Elective Courses.

50. **I. FEEDS AND FEEDING.**—For juniors. A study of the principles of animal nutrition; of the composition and qualities of feeding materials. Textbook, Henry's "Feeds and Feeding."
3 class hours.

Credit, 3.
Assistant Professor RICE.

Prerequisite, Animal Husbandry 25 and 26.

51. **II. FEEDS AND FEEDING.**—For juniors. A study of feeding practice as related to all farm animals. Considerable work will be given in the formulating of rations.
3 class hours.

Credit, 3.
Assistant Professor RICE.

Prerequisite, Animal Husbandry 50.

52. **III. ADVANCED STOCK JUDGING.**—For juniors; seniors may elect. Designed to equip students in the judging of classes of different types of live stock;

to strengthen them in the selection of superior sires; and equip them for stock judging at fairs. Visits are made to the best herds for the various breeds of stock in the State. Judging teams to represent the college will be selected from this class.

1 2-hour and 1 4-hour laboratory period, credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25 and 26.

53. **III. PRINCIPLES OF BREEDING.** — For juniors; seniors may elect. Designed to familiarize students with the problems that are involved in animal improvement; to acquaint them with the facts which are already established; to scrutinize prevailing theories; and to indicate the lines and methods of further work. Some of the subjects studied are: variations, their causes and heritability; DeVrie's theory of mutations; the inheritance of acquired characters; the pure line; Mendelian law; the making of new types; the determination of sex; applications to human heredity. A few periods at the end of the course are devoted especially to the application of principles in live-stock improvement. Supplementary reading.

5 class hours.

Credit, 5.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25, 26, Zoölogy 26.

75. **I. BEEF AND SWINE PRODUCTION.** — For seniors. A study of the leading breeds of beef cattle and swine, together with the work of some of the most successful breeders. Considerable time will be given also to the production of commercial beef and pork. In this course such live-stock management problems as apply to beef cattle and swine will be included.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 51, 52 and 53.

76. **II. HORSE AND SHEEP PRODUCTION.** — For seniors. A study of the production of these animals planned in the same manner as that of the previous course.

2 lectures.

1 2-hour laboratory period, credit, 3.

Assistant Professor GLATFELTER.

Prerequisites, Animal Husbandry 51, 52 and 53.

77. **III. DAIRY CATTLE AND MILK PRODUCTION.** — For seniors. A study of the leading breeds of dairy cattle, the most successful breeders and famous breeding animals, advance registry testing and feeding for production, sales methods and advertising.

2 lectures.

1 2-hour laboratory period, credit, 3.

Prerequisites, Animal Husbandry 51, 52 and 53.

81. **II. DAIRY AND ANIMAL HUSBANDRY.** — For seniors. Seminar for seniors majoring in dairying and animal husbandry.

1 class hour.

Credit, 1.

DEPARTMENTS OF DAIRYING AND ANIMAL HUSBANDRY.

Dairying.

Professor JUDKINS, Assistant Professor YAXIS, Mr. PENDLETON, Mr. SMITH.¹

The dairy manufactures building is new, well lighted and of sanitary construction. It is designed and equipped especially for teaching dairy manufactures. The equipment includes all kinds of machinery that are considered essential to the proper handling of milk and the making of cream, butter, ice cream and soft cheeses.

Course 50 is for students who desire a general idea of dairy work and manu-

¹ Absent on leave.

facturing processes. Some of the courses are arranged to give instruction in general dairy work as associated with Massachusetts agriculture; some are arranged to give to a smaller group of students more complete work in dairy manufactures. Those majoring in dairy manufactures should have at least one summer's experience in a commercial plant before graduation.

50. I. GENERAL DAIRYING. — For juniors; seniors may elect. A general course, prerequisite to all other dairy courses, except course 51, and for those who wish to take only one course in dairying to get a general knowledge of the subject. The work covers briefly a study of milk, its secretion, composition and various tests applied thereto; proper methods of handling milk and cream; the use of separators; elements of butter making, cheese making and ice cream making.
3 class hours. 2 2-hour laboratory periods, credit, 5.
Professor JUDKINS.

51. II. JUDGING DAIRY PRODUCTS. — For juniors. The judging of milk, cheese, butter and ice cream according to standard methods. A team is chosen from this class to represent the college in the dairy products judging contests held at the Eastern States Exposition and at the National Dairy Show.
2 2-hour laboratory periods, credit, 2.
Professor JUDKINS.

52. III. MARKET MILK. — For juniors; seniors may elect. A study of the various phases of the market milk industry, sanitary production; transportation; marketing; handling in the city plant; delivery systems; milk and its relation to the public health; inspection; milk laws; food value and advertising. Some milk plants will be visited.
3 class hours. 1 4-hour laboratory period, credit, 5.
Professor JUDKINS and Mr. SMITH.

Prerequisite, Dairy 50.

75. I. MILK PRODUCTS (1925-26). — For juniors and seniors. The manufacture of milk products other than butter and ice cream, including cheddar cheese, soft and fancy cheese, condensed and powdered milk, casein, commercial butter-milk, etc. Laboratory exercise largely in cheese making and commercial butter-milk manufacture. Given in alternate years.
1 class hour. 1 4-hour laboratory period, credit, 3.
Assistant Professor YAXIS.

Prerequisite, Dairy 50, previously or in conjunction.

76. I. ADVANCED TESTING (1926-27). — For juniors and seniors. Work covers moisture and fat testing for all dairy products; the casein test; salt test for butter; acid tests; work with the Mojonner apparatus and many other applied chemical tests used in dairy manufacture work. Given in alternate years.
2 4-hour laboratory periods, credit, 4.
Mr. PENDLETON.

Prerequisite, Dairy 50, previously or in conjunction.

Elective Courses.

77. II. BUTTER MAKING (1925-26). — For juniors and seniors. A study of separators and cream separation; handling milk and cream for butter making; preparation of starters, and ripening cream; churning; markets and their requirements; marketing, scoring and judging butter; management; butter making machinery and care thereof; problems. Given in alternate years.
2 class hours. 2 3-hour laboratory periods, credit, 5.
Assistant Professor YAXIS.

Prerequisite, Dairying 50.

78. III. ICE CREAM MAKING (1926-27). — For juniors and seniors. A study of the principles and practice of ice cream making. Laboratory equipment is

modern and the laboratory instruction will cover commercial practices. Some ice cream plants will be visited. Given in alternate years.

2 class hours.

2 3-hour laboratory periods, credit, 5.

Professor JUDKINS and Mr. PENDLETON.

Prerequisite, Dairying 50.

Farm Management.

Professor FOORD, Assistant Professor ABELL.

The purpose of the courses in this department is to present various considerations of farming as a business. This involves a knowledge of the cost of production and the profit from the different enterprises such as dairy, poultry or orchard; a study of the enterprises, and the relative amounts of each that will give the best use of labor and equipment on the farm under consideration.

The college farm of 250 acres is under the general supervision of the Department of Farm Management, and furnishes demonstration material. It includes improved land, pasture land and a farm woodlot. The improved land illustrates the value of good culture and the best known methods for the maintenance of fertility. The farm is equipped with suitable buildings and good machinery for the work carried on, of which the production of certified milk is an important branch. Several good farms in the vicinity, illustrating types of both special and general agriculture, may be inspected and studied. The offices of the department are in Stockbridge Hall.

Elective Courses.

51. **II. FARM ACCOUNTS AND COST ACCOUNTING.** — For juniors; seniors may elect. A study of farm inventories, single-enterprise accounts, complete farm accounts and farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of the farm.

3 2-hour laboratory periods, credit, 3.

Professor FOORD.

76. **I. FARM MANAGEMENT.** — For seniors; juniors may elect. A study of farming as a business; regions and types of farming; the general principles of farm management and the influence of size, production, live stock and crop farming on the farmer's labor income; arrangement of fields and buildings; use of land, capital and labor; choosing and buying a farm.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FOORD.

Prerequisites, Agronomy 50, Animal Husbandry 25 and 26, and some farm experience.

77. **III. FARM MANAGEMENT.** — For seniors; juniors may elect. A further and more specific study of the principles and practices as outlined in Course 76, with reference to their application to different regions of the United States and especially to New England. Trips to successful farms are a required part of the course.

1 class hour.

1 4-hour laboratory period, credit, 3.

Professors FOORD and ABELL.

Prerequisites, Farm Management 51 and 76.

78. **II. SEMINAR.** — For seniors majoring in general agriculture; others by arrangement.

1 class hour.

Credit, 1.

Professors FOORD and ABELL.

79. **III. SEMINAR.** — For seniors majoring in general agriculture; others by arrangement.

1 class hour.

Credit, 1.

Professors FOORD and ABELL.

81. **III. FARMING IN THE UNITED STATES.** — For seniors. A study of the agricultural regions of the United States and the different types and methods of farming carried on in each. The economic reasons for the establishment and maintenance of each type will be considered.

2 2-hour laboratory periods, credit, 2.
The DEPARTMENT.

Prerequisite, Farm Management 76.

Poultry Husbandry.

Professor GRAHAM, Professor SANCTUARY, Assistant Professor BANTA, Miss PULLEY.

The introductory courses (50, 51, 52) give a knowledge of the general routine of elementary poultry keeping. The advanced studies prepare men for the successful operation of poultry plants, either as owners or managers. Graduate work, preparation for further teaching, extension or investigation.

The poultry plant consists of 8 acres of land sloping gently to the west. The buildings consist of three incubator cellars equipped with a number of lamp incubators and two mammoth machines with a total capacity of 9,000 eggs; a pipe brooder house (open pipe system) and 40 colony brooder houses which give a brooding capacity for 7,000 chicks, the equipment for these houses including a large variety of coal-stove brooders and kerosene hovers; a long laying house 14 by 180 feet, which accommodates 500 layers, furnishing facilities for student work in pen management, utility and fancy judging, etc.; and a laboratory 14 by 80, for killing, picking, drawing, trussing, packing, crate fattening and cramming. The fattening equipment consists of a modern sanitary all-steel battery with 16 compartments and 10 wooden crates, accommodating, altogether, 350 birds. There are also a storage building, 28 to 64 feet, for root cellar, poultry carpentry, poultry mechanics, feed room and storage; an experimental breeding house, 18 by 60; a combination laying, testing and breeding house, 18 by 72, for experimental purposes; a model laying house, 18 by 30, for 100 hens, and a house 20 by 40, for 200 hens. The six old experiment-station houses, each 12 by 18 feet, are used as special mating and overflow pens. The total capacity for laying hens is 1,600. A manure shed 14 by 18 feet; an oil and tool house 10 by 12; an incinerator 10 by 10; and two backyard model poultry houses 8 by 10 and 8 by 8 give a total of 76 buildings, not including a pheasant run, 16 roosting sheds 10 by 10, and numerous small coops for natural incubation and brooding.

Elective Courses.

50. **I. JUDGING AND CULLING.** — For juniors; seniors may elect. A study of the origin and evolution of our standard breeds and varieties. Judging for production quality, using trap-nested birds; culling the flock; judging exhibition quality by score card and comparison. Several farms will be visited, also several of the leading Connecticut Valley Poultry Shows. Poultry Judging Teams competing in the Intercollegiate Contest at Madison Square Garden are trained in this course.

2 class hours.

2 3-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

51. **II. POULTRY FEEDS AND FEEDING.** — For juniors; seniors may elect. A study of the principles and practices of poultry nutrition and their relationship to other poultry problems. An important part of the work will be the practical management of a pen of birds for a period of weeks, including observations and detailed record keeping.

3 class hours.

2 2-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

52. **III. INCUBATION, BROODING AND GROWING.** — For juniors; seniors may elect. A study of the fundamental principles of incubation and rearing chicks;

also of modern equipment, including small and mammoth incubators and various types of brooding apparatus.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor SANCTUARY and Miss PULLEY.

75. I. POULTRY HOUSING AND SANITATION. — For seniors. A consideration of the biological and economic principles fundamental in the efficient designing, practical construction and equipping poultry farm buildings; also of external parasites and the insecticidal agents for their control.

3 class hours.

Credit, 3.

Assistant Professor BANTA.

76. I. MARKET POULTRY AND POULTRY PRODUCTS. — For seniors. A study of the market classes of poultry, eggs and feathers, the requirements of different markets, methods of marketing, the cold storage of poultry and eggs. Preserving eggs, judging and scoring of live and dressed market poultry and market eggs are important features. Students are required to fatten pens of chickens by different methods and rations, keeping accurate data of the gains in weight and quality, also the costs of feed and labor, and resultant profit or loss. The annual market poultry show is staged under the direction of members of this class.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor GRAHAM and Miss PULLEY.

77. II. POULTRY BREEDING. — For seniors. A study of the principles of breeding and their application to poultry. Practice work in record keeping, pedigree hatching, stud and flock mating will be required as the season permits.

4 class hours.

1 2-hour laboratory period, credit, 5.

Professor SANCTUARY.

78. III. FARM POULTRY. — For seniors; juniors may elect. For those students who desire a general knowledge of poultry husbandry but who cannot devote more than one term to the subject; it is not intended for students specializing in poultry, and such students are admitted only by special permission. Emphasis is placed on the farm flock and its economic management. Utility classification, housing, culling, feeding, hatching, rearing, production, marketing and disease control receive special consideration.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Assistant Professor BANTA.

79. III. POULTRY FARM ORGANIZATION. — For seniors. A study of the organization of the poultry farm for greatest efficiency. The layout of fields and buildings, crop rotations, records, accounts and advertising will receive consideration. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately fifteen dollars. This is required of each student taking the course for credit.

3 class hours.

1 2-hour laboratory period, credit, 4.

Professor GRAHAM.

Prerequisite, Poultry 77.

Rural Engineering.

Professor GUNNESS, Assistant Professor MARKUSON, Mr. PUSHEE, Mr. NEWLON.

The courses in rural engineering are planned to give a working knowledge of those phases of engineering which apply directly to the farm. It is expected that the student will acquire a clear understanding of modern farm practice as it relates to permanent improvements of the farm and the farmstead, and in the selection and use of farm equipment.

This department has an office and the use of a lecture room in Stockbridge Hall. The work on farm structures is given in the large drawing room in the same building. This room is fitted with thirty drawing tables. Models and blue prints are available for the study of farm buildings. A set of post molds

and a machine for making cement tile afford opportunity for practical work with cement.

The rural engineering shop is a one-story structure 100 by 126 feet. The carpenter shop in this building is fitted with benches fully equipped with tools for each student. The general repair shop is equipped with forges, benches, a drill press and grinders. The laboratory for farm machinery and farm motors is equipped with a complete line of field machines, gasoline engines, tractors and pumps. A complete assortment of engine accessories, consisting of carburetors, magnetos, etc., is available for thorough instruction in gas engines. A small dynamo and switchboard are used in the study of farm-lighting systems. The work on the small field machines is given in the basement of Stockbridge Hall, and the work on steam engines and steam heating is given in Flint Laboratory.

Required Courses.

27. **III. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. Exercises are given in freehand lettering, geometric construction, orthographic projection and isometric drawing. Practice is given in inking, tracing and blueprinting.

2 2-hour laboratory periods, credit, 2.
The DEPARTMENT.

30. **III. SHOP PRACTICE.** — For sophomores; juniors and seniors may elect. Practice is given in the use of carpentry tools by exercises in bench work, repair of farm equipment and farm building construction. Exercises in forge work, pipe fitting, soldering, babbiting and fitting bearings, lining up shafting, lacing belts and splicing rope. Practice in the use of machinists' tools, such as file, cold chisel, drill press, lathe, taps and dies.

4 2-hour laboratory periods, credit, 4.
Mr. PUSHEE and Mr. NEWLON.

33. **III. MECHANICS OF THE HOUSEHOLD.** — For sophomores. A study of mechanics in their relation to the household, including heat, light, electricity, the testing, care and maintenance of household equipment and appliances.
2 class hours.

2 2-hour laboratory periods, credit, 4.
The DEPARTMENT.

Elective Courses.

53. **II. HOUSE PLANNING AND CONSTRUCTION.** — For juniors. A study of the common building materials and their use in house construction. The principles of house planning will be studied and plan designs originated, consideration being given to such problems as heating, lighting, water supply and sewage disposal. The economics of house building, including financing, maintenance and overhead expense, will also be studied.
2 class hours.

2 2-hour laboratory periods, credit, 4.
The DEPARTMENT.

75. **I. FARM STRUCTURES.** — For seniors; juniors may elect. A study of the strength and durability of concrete, wood, stone, and clay products, and of the mechanical principles underlying their use in farm construction. The design of various farm buildings, such as the general purpose barn, dairy stable, hog house, sheep barn, milk house, etc. In the drafting room, details of construction will be worked out, a study of the mechanics of simple roof trusses will be made, and a complete design of some major farm building will be finished in all essential details. If time permits, blueprints of the finished design can be made.
2 class hours.

3 2-hour laboratory periods, credit, 5.
The DEPARTMENT.

78. **II and III. FARM MOTORS.** — For seniors; juniors may elect. This course deals with the gasoline engine as used for stationary work, automobiles and tractors. Instruction is given by means of lectures and textbooks, and by

operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing.

3 class hours.

2 2-hour laboratory periods, credit, 5.

The DEPARTMENT.

79. **III. DRAINAGE AND IRRIGATION ENGINEERING.** — For seniors; juniors may elect. Covers the engineering phase of drainage and irrigation. The various systems are studied, and practice is given in the design of drainage and irrigation systems. Field work gives practice in surveying for drains, platting, locating drains, erecting batterboards and laying tile. Practice is given in assembling equipment for spray irrigation, and the flow of water through nozzles is studied by means of laboratory tests.

2 class hours.

2 3-hour laboratory periods, credit, 5.

The DEPARTMENT.

81. **III. DAIRY MECHANICS.** — For juniors; seniors may elect. A study of dairy machinery, including steam boilers, engines, pumps, traps, refrigeration machinery, and heat-controlling devices. Practice is given in pipe fitting, packing valves, lacing belts, and similar repair jobs on the equipment used in dairy plants.

3 class hours.

1 3-hour laboratory period, credit, 4.

Professor GUNNESS and Mr. NEWLON.

DIVISION OF HORTICULTURE.

Professor WAUGH.

[Heavy-faced Roman numerals indicate the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Floriculture.

Professor THAYER, Assistant Professor MULLER.

The courses in floriculture are intended to present a general knowledge of all phases of greenhouse design, construction, heating and management, the culture of florists' crops (under glass and in the field), floral decoration and arrangement. The department aims to train students so that they may take up commercial floriculture (either in the growing or retail business) and the management of conservatories on private estates, in parks and cemeteries.

The department is especially well equipped for the teaching work, probably being surpassed in no other agricultural college. French Hall, with its laboratories, classrooms and offices, furnishes excellent facilities for the purposes of instruction. The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall range of 7,200 square feet, a durable, practical, commercial range composed of palm and fern, violet, carnation, rose and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet, suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has 2 acres of land used for the summer culture of carnations, violets, gladioli, dahlias, sweet peas, bedding plants, etc. This also includes a small garden of about 4,700 square feet devoted to the culture of annuals. A large collection of biennials and herbaceous perennials is maintained and is being enlarged from year to year; at the present time the collection consists of several hundred species and varieties, and provides an excellent opportunity for the study of garden flowers.

Elective Courses.

50. **I. GREENHOUSE MANAGEMENT.** — For juniors; seniors may elect. Designed to familiarize students with the methods followed in the management of greenhouses and of greenhouse crops and the principles underlying the same; history and development of the floricultural industry; preparation of soils; fertilizers; potting; watering; ventilation; control of insects and diseases; methods

Part II.

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of plant propagation; forcing of plants. At some time during the term the members of the class will be required to take a one-day trip to visit large commercial establishments. Lectures, assigned readings, reports and laboratory practice.
2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professor MULLER.

Prerequisite, Horticulture 25 and 26.

51. **II. GREENHOUSE MANAGEMENT.** — For juniors; seniors may elect. Continuation of Course 50. Several field trips, to study floricultural establishments in the vicinity, will be made during the laboratory periods.
2 class hours.

1 4-hour laboratory period, credit, 4.

Assistant Professor MULLER.

52. **III. FLORAL ARRANGEMENT.** — For juniors; seniors may elect. A study of the principles underlying the arrangement and use of cut flowers and plants; funeral designs, basket and vase arrangement, table decorations, home, church and all interior decorations; a study of color as applied to such work. Lectures, assigned readings and reports. This course will be limited to ten students.
2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor THAYER.

53. **I. GREENHOUSE CONSTRUCTION AND HEATING.** — For juniors; seniors may elect. The location, types, arrangement, construction, cost, equipment, heating and ventilating of greenhouse structures; the drawing of plans and study of specifications for commercial houses and conservatory ranges. Such practical work as glazing and the construction of concrete benches and cold frames is included as facilities allow. Lectures, assigned readings and problems.
3 class hours.

1 2-hour laboratory period, credit, 4.

Professor THAYER.

55. **III. GARDEN FLOWERS AND BEDDING PLANTS.** — For juniors and seniors. A study of the annuals, biennials, herbaceous perennials, bulbs, bedding plants and roses that are valuable for use in floricultural or landscape gardening work. Methods of propagation, culture and uses of the various plants are considered; identification of material. Lectures, assigned readings and reports.
2 class hours.

1 2-hour laboratory period, credit, 3.

Professors THAYER and MULLER.

75. **I. COMMERCIAL FLORICULTURE.** — For seniors. A detailed study of the important commercial cut flower crops and potted plants. Visits will be made to commercial establishments during the term. The lectures are supplemented with textbooks and assigned readings.
2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

Prerequisite, Floriculture 51.

76. **II. COMMERCIAL FLORICULTURE.** — For seniors. As stated under Course 75.
2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

Prerequisite, Floriculture 75.

77. **III. COMMERCIAL FLORICULTURE.** — For seniors. As stated under Course 75.
2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor MULLER.

Prerequisite, Floriculture 76.

79. **II. CONSERVATORY PLANTS.** — For seniors. A study of the foliage and flowering plants used in conservatory work; methods of propagation, culture, use and arrangement; identification of plants. Lectures, assigned readings and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

Prerequisite, Floriculture 51.

80. **III. SEMINAR.** — For seniors majoring in floriculture. Advanced study of subjects pertaining to some phase of floriculture. All students are assigned specific problems and pursue study in these problems by reading and research; the results of this study must be presented in the form of a thesis. Seminars are conducted weekly.

1 class hour.

2 to 4 laboratory hours, not to exceed 3 credits.

Professor THAYER.

Forestry.

Professor GROSE.

The forestry courses are intended primarily for prospective owners or managers of farm woodlots, and the field work is focused on typical New England problems. These courses are broad enough, however, to furnish valuable preparation for students planning to study forestry in graduate schools.

The department has an unusually complete equipment of the various instruments used in forest mensuration, forest mapping and engineering, timber estimating, log scaling, board measuring, etc.; and a large assortment of boards illustrative of the various commercial woods found in the lumber markets. The State Forest Nursery, comprising 14 acres of land and containing, approximately, 10,000,000 trees, transplants and seedlings, is on the college farm. Forests containing every variety of tree common to New England are within walking distance of the college. The college campus affords an arboretum containing a large number of trees not native to New England. The Mount Toby Demonstration Forest has an area of approximately 750 acres, and contains the various types of forest growth found throughout the State. It serves as a field laboratory in which students have the privilege of working out problems in silviculture, forest mensuration and management. Improvement cuttings, cuttings for utilization, and forest plantings are conducted by the department.

55. **I. WOODLOT FORESTRY: ESTIMATING AND BUSINESS MANAGEMENT.** — For juniors and seniors. Topics: forest mapping; timber-cruising; determining rate of growth and possible cut; financial returns; forest taxation; our national timber supply, present and future.

1 2-hour and 1 4-hour laboratory period, credit, 3.

Professor GROSE.

56. **II. WOODLOT FORESTRY: LOGGING, MILLING AND MARKETING.** — For juniors and seniors. Topics: felling trees; sawing logs; hauling logs; the portable mill; the stationary mill; seasoning, measuring and shipping lumber; lumber grades and prices; legal forms; by-products of the woodlot; adaptability of species to uses; wood-using industries of Massachusetts.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor GROSE.

Prerequisite, Forestry 55.

57. **III. WOODLOT FORESTRY: TIMBER-RAISING.** — For juniors and seniors. Topics: forest planting; weeding; release cuttings; pruning; thinning; salvage cutting; protection from insects, fungi, fire, etc.; final cutting methods for natural reproduction of the forest.

1 2-hour and 1 4-hour laboratory period, credit, 3.

Professor GROSE.

58. **III. WOODLOT FORESTRY: BRIEF SURVEY.** — For juniors and seniors. A condensation of Courses 55, 56 and 57 for those who have only one term to give to forestry.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GROSE.

Horticultural Manufactures.

Professor CHENOWETH, Mr. ROBERTSON.

The courses aim to give a practical knowledge of the problems connected with food preservation. Emphasis is placed upon the conservation of the cheaper grades of fruits and vegetables, to the end that the whole crop may be marketed at a profit and that wholesome food products may result from what would otherwise be lost. The social and economic values of this work are constantly emphasized.

The department occupies three laboratory rooms in Flint Laboratory, two in Fisher Laboratory, with offices in Wilder Hall and French Hall. The general equipment of the department, both for the use of students and for manufacturing purposes, may be grouped under the following heads:—

1. *Canning.* — A modern canning outfit, including both steam-pressure cookers and hot-water baths, hand and power can sealers, peeling and slicing machines, a string bean cutter, heat-penetration thermometers, electric incubator and a large assortment of all types of home canning equipment.

2. *Evaporation.* — Two small orchard evaporators, a tunnel drier, peeling machines, slicers and a general assortment of driers adapted to home evaporation.

3. *Fruit Juices, Butters, etc.* — A hand cider mill, a motor-driven hydraulic press, a steam-jacketed kettle, an apple-butter cooker, and cider and vinegar testing apparatus.

Elective Courses.

75. **I. HORTICULTURAL MANUFACTURES.** — For seniors and graduate students. A practical course in food preservation dealing primarily with fruits and vegetables. The canning of fruits and vegetables as practiced in the home and in commercial canneries; evaporation of fruits and vegetables, the various types of equipment and methods of preparation of products. The manufacture of (a) fruit products, such as butters, jams, jellies, fruit juices, marmalades, preserves, vinegars, pastes, etc.; (b) vegetable products, as pickles, piccalilli, sauerkraut, soups, etc. Particular attention is given to study and use of all types of equipment suitable for use in the home or small factory, together with methods for testing a large variety of manufactured products. The emphasis is on canning, drying and study of equipment.
2 class hours.

3 2-hour laboratory periods, credit, 5.
Professor CHENOWETH.

76. **II. HORTICULTURAL MANUFACTURES.** — For seniors and graduate students. A continuation of Course 75. The emphasis in this course is placed on the manufacturing and testing of fruit and vegetable products.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 75.

77. **III. HORTICULTURAL MANUFACTURES.** — For seniors and graduate students. Continuation of courses 75 and 76, dealing primarily with maple products, the canning of meats and spring vegetables, and studies of special problems involved in establishing and operating home and farm factories.

2 2-hour laboratory periods, credit, 2.
Professor CHENOWETH.

78. **III. HORTICULTURAL MANUFACTURES.** — For seniors and graduate students. A general course in food preservation, including lectures, readings and laboratory work in the canning and evaporation of fruits and vegetables, the

manufacture of fruit and vegetable products. Special emphasis will be given to the conservation of the low-grade fruits and vegetables in the home and in the farm factory.

2 class hours.

2 2-hour laboratory periods, credit, 4.

PROFESSOR CHENOWETH.

80. **I. HORTICULTURAL MANUFACTURES.** — For seniors. A course dealing with the problems of food preservation in the home. Application of present-day knowledge to the practices of canning, pickling, drying and the manufacture of fruit and vegetable products in the home.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor CHENOWETH and Mr. ROBERTSON.

Horticulture.

Professor WAUGH, Professor THOMPSON, Assistant Professor DICKINSON, Mr. ARRINGTON.

The general subject of horticulture divides naturally into subjects of pomology, floriculture, forestry, landscape gardening and vegetable gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.

Required Courses.

25. **I. TAXONOMY AND ECOLOGY OF HORTICULTURAL PLANTS.** — For sophomores. A study of the outstanding botanical characters of the principal families, genera, species and varieties of cultivated plants; together with a consideration of those principles of ecology utilized in the cultivation of plants.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor THOMPSON.

26. **II. PHYSIOLOGY OF HORTICULTURAL PLANTS.** — For sophomores. This course is designed to demonstrate and explain the principles of plant physiology in their practical application to the cultivation of economic plants. Consideration will be given to the methods of propagation and to the culture of plants in their relation to soils, tillage, water and food supply, etc.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor DRAIN.

27. **III. BREEDING OF HORTICULTURAL PLANTS.** — For sophomores. A study of the principles of inheritance as applied to plants; together with a consideration of the methods used and problems involved in the improvement of cultivated plants.

5 class hours.

Credit, 5.

Mr. FRENCH.

Elective Courses (General).

50. **I. PLANT MATERIALS.** — For juniors; seniors may elect. Aims to make the student familiar with the character of the trees, shrubs and herbaceous perennials used in ornamental work, and with the methods of propagating them.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor THOMPSON.

51. **III. PLANT MATERIALS.** — For juniors; seniors may elect. A continuation of Course 50, taking up the field use of trees, shrubs and herbaceous plants, their native habitats, soils and plant associations, with a view to supplying to students in landscape gardening and floriculture a knowledge of plant species. Frequent practicums and field excursions.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor THOMPSON.

Prerequisite, Horticulture 50.

Landscape Gardening.

Professor WAUGH, Assistant Professor HARRISON, Assistant Professor QUINLAN.

The purposes of the courses are: (1) To train men for the profession in all its branches. As a rule graduates should first enter the employ of established landscape architects, nurserymen or park superintendents, and after an apprenticeship of several years those who have the requisite technical and business ability may set up for themselves. (2) To train men for public-service work in national, State and municipal parks and forests. (3) To train men for country planning, this function being exercised through various public institutions and organizations. (4) To train teachers and extension workers in lines of landscape gardening and civic improvement. (5) To give a broad and liberal general education stressing the fundamental principles of art.

The department has large, well-lighted drafting rooms, with necessary equipment, such as planimeters, eidograph, pantograph, blueprinting outfit, etc.; and a complete outfit of surveying instruments, including transits, levels, plane tables, prismatic compasses, hand levels, etc. The college campus presents an unusually good collection of the plant materials used in landscape gardening.

Required Course.

30. **I. ELEMENTARY DESIGN.** — For sophomores. Offered for the year 1925-26.

3 2-hour laboratory periods, credit, 3.

Elective Courses.

50. **I. MAPPING AND TOPOGRAPHY.** — For juniors. Reconnaissance surveys and mapping, with special reference to the methods used in landscape gardening; detailed study of selected designs of leading landscape gardeners; grade design, road design and field work. Must be followed by Course 51.

2 2-hour laboratory periods; 2 3-hour laboratory periods, credit, 5.

Assistant Professor HARRISON.

Prerequisites, Mathematics 26 and 27, Drawing 25, 26 and 27.

51. **II. ELEMENTS OF LANDSCAPE GARDENING.** — For juniors. As stated under Course 50.

3 3-hour laboratory periods, credit, 4.

Assistant Professor HARRISON.

Prerequisite, Landscape Gardening 50.

52. **III. GENERAL DESIGN.** — For juniors. Field notes; examination of completed works and those under construction; design of architectural details, planting plans, gardens, parks and private grounds; written reports on individual problems.

2 2-hour laboratory periods; 2 3-hour laboratory periods, credit, 5.

Assistant Professor HARRISON.

Prerequisites, Landscape Gardening 50 and 51, and either plant materials (Horticulture 50 and 51) or advanced mathematics.

75. **I. THEORY OF LANDSCAPE ART.** — For seniors and graduates. The general theory and applications of landscape study, including a brief history of the art. 3 class hours.

Credit, 3.

Professor WAUGH.

76. **I. CIVIC ART.** — For seniors. The principles and applications of modern civic art, including city planning, city improvement, village improvement and rural improvement, with special emphasis upon country planning. Must be followed by Course 77.

3 3-hour laboratory periods, credit, 4.

Assistant Professor QUINLAN.

Prerequisite, Landscape Gardening 52.

77. **III. COUNTRY PLANNING.** — For seniors. As stated under Course 76.
3 3-hour laboratory periods, credit, 4.
Professor WAUGH.

Prerequisite, Landscape Gardening 76.

78. **I. ARCHITECTURE (1926-27).** — Alternates with Course 79. For juniors and seniors. The history of architectural development, the different historic types, with special reference to the underlying principles of construction and design and their relations to landscape design. Illustrated lectures, conferences, practice in designing.
3 class hours.

Credit, 3.

Assistant Professor HARRISON.

79. **I. CONSTRUCTION AND MAINTENANCE (1925-26).** — Alternates with Course 78. For juniors and seniors. Detailed instruction in methods of construction and planting in carrying out plans, in organization, reporting, accounting, estimating, etc.; maintenance work in parks and on estates, its organization, management, cost, etc.
3 class hours.

Credit, 3.

Assistant Professor HARRISON.

80. **II. THEORY OF DESIGN.** — For seniors. As stated under Course 52.
3 3-hour laboratory periods, credit, 4.
Professor WAUGH.

Prerequisite, Landscape Gardening 52.

81. **II. ESTATE DESIGN.** — For seniors.
3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

82. **III. PARK DESIGN.** — For seniors.
3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

Pomology.

Professor SEARS, Professor VAN METER, Assistant Professor DRAIN, Mr. FRENCH, Mr. RALEIGH.

The object of the course is to give a training which shall be thoroughly practical and yet scientific. This will fit the men to enter the field of practical fruit growing, or it will furnish an excellent foundation for further study.

The department has 50 acres in fruit plantations. The apple orchards comprise about 35 acres, and there are blocks of pears, peaches, plums and cherries. In small fruits there are plantings of strawberries, raspberries, blackberries, currants and gooseberries. There are three vineyards, with a total area of 5 acres, in which the leading varieties and the principal types of pruning and training are represented. In these plantations are 50 varieties of grapes, representing three native American species and many hybrids; 20 varieties of peaches; 20 varieties of pears; 25 of plums, including five species and many hybrids; and 100 varieties of apples.

The department has an excellent equipment of spraying and dusting machinery, including various styles and sizes of power sprayers, and many types of barrel pumps and smaller sprayers. There is also an excellent assortment of orchard tools, including plows, harrows, fertilizer sowers, etc.

Fisher Laboratory is one of the best planned and equipped packing and storage plants in the United States. It includes six refrigerated rooms; four storage rooms not refrigerated; one large laboratory room and one classroom, besides ample storage room for fruit packages and equipment. The equipment for the building itself includes four types of apple sizers; packing tables and box and barrel presses of various types, besides all kinds of packages and the smaller equipment necessary for thoroughly modern work in grading and packing fruit. The department is equipped with lockers and with pruning and other tools for the use of students in laboratory work, which is made a leading feature in all the courses in pomology.

Elective Courses.

50. **I. PRACTICAL POMOLOGY.** — For juniors; seniors may elect. A study of the general principles of the growing of fruits, dealing with such questions as selection of site, soils, windbreaks, laying out plantations, choice of nursery stock, pruning, culture of orchards, orchard fertilizers, cropping orchards, etc. Lectures, supplemented with text and reference books; field and laboratory exercises.
2 class hours. 1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. FRENCH.

Prerequisite, Horticulture 26.

51. **II. PRACTICAL POMOLOGY.** — For juniors; seniors may elect. As stated under Course 50.
2 class hours. 1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. FRENCH.

Prerequisite, Pomology 50.

52. **III. SMALL FRUITS.** — For juniors; seniors may elect. A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, gooseberries and grapes, dealing with such questions as their propagation, selecting a site for the plantation, soils, fertilizers, pruning, etc.
2 class hours. 1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. FRENCH.

Prerequisite, Pomology 51.

54. **II. SYSTEMATIC POMOLOGY.** — For juniors; seniors may elect. A study of varieties of fruits including identification, nomenclature, relationships and classification. This course is advised but not required of candidates for the varsity fruit judging team. Lectures, laboratory and field exercises.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DRAIN.

75. **I. SYSTEMATIC POMOLOGY.** — For seniors. A continuation of Course 54, with special reference to nursery variety certification, variety study of pears, grapes, plums, cherries, strawberries, raspberries, blueberries and blackberries.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DRAIN.

Prerequisite, Pomology 54.

76. **II. ORCHARD MANAGEMENT.** — For seniors. This course will consider the more important problems in connection with the organization and management of a fruit farm. Specialization and diversification and the place of each of the common fruit crops on the farms of Massachusetts will be studied in relation to the distribution of labor and income. The combination of fruit growing with other lines of farming will be discussed in connection with conditions in this State and combinations in successful operation will be studied. The course is intended to bring principles learned in the previous years in college to bear upon the particular problems of the fruit grower.
2 class hours. 1 2-hour laboratory period, credit, 3.
Professor VAN METER.

Prerequisite, Pomology 51.

77. **I. COMMERCIAL POMOLOGY.** — For seniors. The picking, handling, storing and marketing of fruits, including a discussion of storage houses, fruit packages, methods of grading and packing. Especial emphasis is placed upon laboratory and field work, where the student is given actual practice in the picking and packing of all the principal fruits.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Mr. RALEIGH.

Prerequisite, Pomology 51.

78. **III. SPRAYING.** — For seniors. A study of (a) spraying materials, their composition, manufacture and preparation for use; the desirable and objectionable qualities of each material, formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard. Spray materials are prepared, spraying apparatus is examined and tested, old pumps are overhauled and repaired, and the actual spraying is done in the college orchards and small-fruit plantations.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor DRAIN.

Prerequisite, Pomology 76.

79. **II. GENERAL POMOLOGY.** — For seniors; juniors may elect. Planned to meet the needs of students who cannot devote more than one term to the subject but who want a general knowledge of fruit growing. Consists of lectures and laboratory exercises on such topics as choosing the locations, kinds and varieties of fruits to grow, securing and setting the plants, care and cultivation, pruning, spraying, pests, harvesting and storing.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor DRAIN.

80. **I. SEMINAR.** — For seniors majoring in pomology. Advanced study of problems relating to the business of fruit growing. Each student is assigned a major and a minor problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.
The DEPARTMENT.

81. **II. SEMINAR.** — For seniors majoring in pomology. A continuation of Course 80. One seminar meeting each week.

1 class hour.

Credit, 1.
The DEPARTMENT.

82. **III. SEMINAR.** — For seniors majoring in pomology. A continuation of Course 81. One seminar meeting each week.

1 class hour.

Credit, 1.
The DEPARTMENT.

Vegetable Gardening.

PROFESSOR WAUGH, — — —, MR. SNYDER.

The courses in Vegetable Gardening are designed for students who wish to enter commercial vegetable growing, the seed business, or professional work, such as teaching or experimental work. Each of these fields offers wide possibilities and the advancement of vegetable production will depend upon the number and quality of the men trained along these lines.

The department has ten acres of land, 3,800 sq. ft. of greenhouse space, and 150 hotbed sash, all of which are used to provide laboratory facilities. Part of this equipment is used for the non-commercial laboratory work, such as the students' gardens and the type and variety garden, while the remainder is devoted to commercial laboratory work.

In addition the department maintains at Waltham, Massachusetts, the Market Garden Field Station. Here the experimental and extension work of the department is carried on.

Elective Courses.

50. **III. GENERAL VEGETABLE GARDENING.** — For juniors; seniors may elect. A general course for those students who desire a general knowledge of agriculture, but do not care to spend the time for extreme specialization. Designed to teach the fundamentals of vegetable growing so they may be applied (1) to the growing of vegetables commercially as a cash crop with other types of agriculture, (2) to the growing of vegetables in the home garden, (3) to agricultural teaching in secondary schools, and (4) to professional agricultural work other than teaching.
3 class hours. 2 2-hour laboratory periods, credit, 5.

52. **II. PRACTICAL VEGETABLE GARDENING.** — For juniors; seniors may elect. Courses 52 and 53 are designed for those students who wish to obtain a knowledge of vegetable growing in order that they may apply this to the successful commercial production of vegetables, or to become fitted for professional work such as teaching and research work. The course begins with a consideration of vegetables as a food, the part they play in the food supply of the city, State, or nation, and Massachusetts' part in this type of food production, followed by a study of the fundamentals of vegetable gardening. Deals with such questions as the selection of a location; soils, manures and fertilizers, green manures and cover crops; seeds and seeding; planting, tillage, irrigation; control of insects and diseases. Includes a detailed study of the cultural requirements of the common vegetable crops, and the principles of rotation and double cropping. Text and reference books. Laboratory and field exercises.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisites, Horticulture 26, Agronomy 75.

53. **III. PRACTICAL VEGETABLE GARDENING.** — For juniors; seniors may elect. As stated under Course 52.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 52.

75. **I. TYPES AND VARIETIES.** — For seniors. Includes the systematic study of types, varieties and strains of the leading vegetable crops; exhibiting and judging of vegetables; determination of quality in vegetables; seed growing, variety improvement, roguing, seed harvesting, curing and storing.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

76. **II. VEGETABLE FORCING.** — For seniors. A study of types, materials, construction, location, arrangement, capacity and cost of greenhouses for growing vegetables. A brief consideration of the heating plant, — the type, installation, piping and management; also the study of greenhouse vegetable crops and their production as practiced by commercial growers.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

77. **III. COMMERCIAL VEGETABLE GROWING.** — For seniors. A consideration of vegetable growing as a business. A study of this specialized type of farming, including places where developed, types, extent, economic importance, capitalization, equipment and other fundamental problems of commercial vegetable gardening. Students assist in the planning and operation of a typical market-gardening area. Visits are made to market-gardening and truck-gardening farms.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

Drawing.

Required Courses.

25. **I. FREE-HAND DRAWING.** — For sophomores; juniors and seniors may elect. Lettering; free-hand perspective; sketching from type models, leaves, flowers and trees, houses, etc.; laying flat and graded washes in water colors; water-color rendering of leaves, flowers and trees; conventional coloring and map rendering in water-colors; conventional signs and mapping in ink.

4 2-hour laboratory periods, credit, 4.

26. **II. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. Inking exercises; geometric problems; projection; intersections; isometric; shades and shadows; parallel; angular and oblique perspective; perspective drawing of buildings. Students should have preparation in plane and solid geometry.

3 2-hour laboratory periods, credit, 3.

27. **III. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. As stated under Course 26.

4 2-hour laboratory periods, credit, 4.

Prerequisite, Drawing 26.

DIVISION OF SCIENCE.

Professor FERNALD.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Botany.

Professor OSMUN, Assistant Professor CLARK, Assistant Professor McLAUGHLIN, Assistant Professor TORREY,
Assistant Professor DAVIS.

A knowledge of the principles of plant life is fundamental in agricultural education. The required courses in botany are planned with this and the general educational value of the subject in view. Elective courses are of two types: (1) those which have for their chief aim the direct support of technical courses in agriculture and horticulture, and (2) those providing broader, more intensive training in the science. Courses in the second group may lead, when followed by postgraduate study, to specialization in the field. They also furnish excellent training for those specializing in other sciences and in scientific agriculture. In all undergraduate courses the relation of the science of botany to agriculture is emphasized.

The department occupies Clark Hall, a brick building 55 by 95 feet, two stories high, with basement and attic. The building has two lecture rooms with seating capacity of 154 and 72, respectively; one seminar and herbarium room; large laboratories for general and special work; and smaller rooms for advanced students. A glass-enclosed laboratory for plant physiology adjoins the main building and provides unusual facilities for the study of phenomena of plant life. In addition, a greenhouse 28 by 70 feet is connected with the building. This is for experimental work in plant pathology and physiology, and for growing plants needed for instruction. The experiment station laboratories devoted to botanical research are in this building.

The laboratories and lecture rooms are of modern construction, finely lighted and equipped with compound and dissecting microscopes, microtomes, paraffine and drying ovens, physiological and other apparatus, and a large collection of charts. The herbarium contains about 20,000 sheets of seed plants and ferns, 1,200 sheets of liverworts and mosses, and 25,000 specimens of fungi. Facilities and equipment for the study of plant physiology and pathology are excelled in few other institutions.

Required Courses.

3. **III. INTRODUCTORY BOTANY.** — For freshmen. Presents the seed plants as plastic organisms molded by their environment. Also introduces the student to methods of identifying and classifying plants.
2 class hours.

2 2-hour laboratory periods, credit, 4.
Assistant Professor TORREY.

25. **I. INTRODUCTORY BOTANY.** — For sophomores. The anatomy and physiology of the seed plants (Phanerogamia).
1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor TORREY.

Prerequisite, Botany 3.

26. **III. MORPHOLOGY AND TAXONOMY OF THE LOWER PLANTS (CRYPTOGAMIA).** — For sophomores. Systematic study of typical forms of bacteria, algæ, fungi, lichens, mosses, ferns. (Courses 3, 25 and 26 constitute a general elementary course in botany, and are required of all students who major in science.)
1 class hour.

3 2-hour laboratory periods, credit, 4.
Professors OSMUN and McLAUGHLIN.

Prerequisite, Botany 25.

Elective Courses.

50. **I. DISEASES OF CROPS.** — For juniors; seniors may elect. The lectures are general and are taken by all who elect the course, but in order to permit students to specialize on the diseases of crops most closely related to their majors or in which they are most interested, the course is divided for lecture and laboratory work into the following sections: (I) diseases of truck and field crops; (II) diseases of floricultural crops and ornamentals; (III) diseases of fruit crops; (IV) diseases of shade and forest trees. One, two or three laboratory sections may be taken.

1, 2 or 3 class hours. 1, 2 or 3 2-hour laboratory periods, credits, 2, 4 or 6.
Assistant Professor McLAUGHLIN.

Prerequisites, Botany 3 and 25.

51. **II. DISEASES OF CROPS.** — For juniors; seniors may elect. As stated under Course 50.

1, 2 or 3 class hours. 1, 2 or 3 2-hour laboratory periods, credits, 2, 4 or 6.
Assistant Professor McLAUGHLIN.

Prerequisite, Botany 50.

52. **I. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; study of system of classification; collateral reading. A prerequisite of the senior course in plant pathology, but open to all.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

Prerequisite, Botany 26.

53. **II. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. As stated under Course 52.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

Prerequisite, Botany 52.

54. **III. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. As stated under Course 52.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

Prerequisite, Botany 53.

55. **III. PLANT HISTOLOGY.** — For juniors; seniors may elect. Comparative study of the tissue of plants; training in histological methods, including the use of precision microtomes, methods of killing, fixing, sectioning, staining and mounting; collateral reading and conferences. This course offers valuable training in preparation for further work in botany.

5 2-hour laboratory periods, credit, 5.

Assistant Professors McLAUGHLIN, TORREY and DAVIS.

Prerequisite, Botany 3 and 25.

58. **I. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. An intensive study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study. Alternates with Course 61.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

59. **II. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. As stated under Course 58. Alternates with Course 62.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

60. **III. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. As stated under Course 58. Alternates with Course 63.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

61. **I. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1925-26).** — For juniors and seniors. In the lectures an intensive study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides. Alternates with Course 58.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

62. **II. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1925-26).** — For juniors and seniors. As stated under Course 61. Alternates with Course 59.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

63. **III. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1925-26).** — For juniors and seniors. As stated under Course 61. Alternates with Course 60.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor TORREY.

75. **I. PLANT PATHOLOGY.** — For seniors. Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station and college work.

1 class hour.

4 2-hour laboratory periods, credit, 5.

Professors OSMUN and DAVIS.

Prerequisite, Botany 54.

76. **II. PLANT PATHOLOGY.** — For seniors. As stated under Course 75.

1 class hour.

4 2-hour laboratory periods, credit, 5.

Professors OSMUN and DAVIS.

Prerequisite, Botany 75.

Part II.

77. **III. PLANT PATHOLOGY.** — For seniors. As stated under Course 75.
1 class hour. 4 2-hour laboratory periods, credit, 5.
Professors OSMUN and DAVIS.

Prerequisite, Botany 76.

78. **I. PLANT PHYSIOLOGY.** — For seniors. Study of the factors and conditions of (a) Plant Nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) Plant Growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) Plant Movements, including those due to the taking up of water, and those movements of both motile and fixed forms in response to external stimuli. Weekly conferences are held at which students report on assignments to original sources in the literature.
2 class hours. 3 2-hour laboratory periods, credit, 5.
Assistant Professor CLARK.

Prerequisites, Botany 26 and Chemistry 51.

79. **II. PLANT PHYSIOLOGY.** — For seniors. As stated under Course 78.
2 class hours. 1 or 3 2-hour laboratory periods, credit, 3 or 5.
Assistant Professor CLARK.

Prerequisite, Botany 78 for the 10-credit course, Botany 25 for the 6-credit course.

80. **III. PLANT PHYSIOLOGY.** — For seniors. As stated under Course 78.
2 class hours. 1 or 3 2-hour laboratory periods, credit, 3 or 5.
Assistant Professor CLARK.

Prerequisite, Botany 79.

General and Agricultural Chemistry.

Professor LINDSEY, Professor CHAMBERLAIN, Professor PETERS, Assistant Professor SEREX, Dr. BUTLER.

In teaching the courses in chemistry, emphasis is laid on both their educational and their vocational value. The courses in the freshman year deal with fundamental principles, and give the student such an understanding of the subject as will enable him to apply it in farm practice. The more advanced courses, including quantitative analysis, organic, physiological and physical chemistry, are for those who intend to become teachers and workers in the allied sciences, or who desire to follow agricultural chemistry as a vocation. Advanced training is given by means of postgraduate courses (see Graduate School).

Those completing the undergraduate courses are fitted for positions in the agricultural industries, — fertilizer, feed and insecticide manufacture, — as well as in other lines of industry, and in the State experiment stations, in commercial laboratories, and in high school teaching. Postgraduate students are prepared for positions as teachers in colleges, and for more advanced positions in industry and in the experiment stations.

The new Goessmann Chemistry Laboratory was opened for classes in September, 1924.

Required Courses.

The freshman work consists of two distinct parts: Courses 1 and 2 contain more hours and are for those who have had no chemistry in the secondary schools, and Courses 4 and 5 are for those who have presented chemistry for entrance. Both groups of courses bring the student out at the same point. It is obviously to the advantage of the student to take a course in chemistry in high school and thus obviante the extra hours of Courses 1 and 2 in the freshman year.

1. **I. GENERAL CHEMISTRY.** — For freshmen. This course is for those students who do not present chemistry for entrance and who begin the subject in college. An introduction to the fundamental chemical laws, together with a study of the typical acid- and base-forming elements and their compounds.
3 class hours. 2 2-hour laboratory periods, credit, 5.
Dr. BUTLER.

2. **II. AGRICULTURAL CHEMISTRY.** — For freshmen. A continuation of Course I. A study of the common elements. Special emphasis on the application of the fundamental chemical laws particularly in connection with agriculture and every-day life. The preparation of a number of substances important in agriculture, such as superphosphate, ammonium sulfate, muriate and sulfate of potash, Paris green, arsenate of lead, Bordeaux mixture, lime-sulfur and emulsions. These materials are prepared in the laboratory and studied in detail in the classroom; some of the substances prepared may be analyzed. Particular attention will be given to a study of the composition, properties and reactions of soils. Approximate quantitative determinations of a number of constituents of soils and fertilizers will be made.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Dr. BUTLER.

4. **I. ADVANCED GENERAL CHEMISTRY.** — For freshmen. A review of general chemistry centered, for the most part, about the laboratory work. Text-books, Holmes' "General Chemistry," and Peters' "The Preparation of Substances Important in Agriculture." The laboratory work takes the synthetic form. Substances of agricultural importance are prepared in quantity and studied in detail by the student. These include ammonium sulfate, superphosphate, muriate and sulfate of potash, arsenate of lead, Paris green, Bordeaux mixture, lime-sulfur and emulsions.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor PETERS.

Prerequisite, Entrance Chemistry.

5. **II. INORGANIC AGRICULTURAL CHEMISTRY.** — For freshmen. A study of the chemical composition, properties and reactions of soils, fertilizers, fungicides and insecticides. The laboratory work is divided into three parts: (a) qualitative examination of soil, plant ash and superphosphate; (b) approximate quantitative determination of moisture, ash, carbonic acid, phosphoric acid, potash, nitrogen, etc., in farm crops, soils and fertilizers; (c) special work on retention of salts by soil, leaching of lime from the soil by carbonated water, etc.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professor SEREX.

25. **I. QUALITATIVE ANALYSIS.** — *Basic.* — For sophomores. The systematic analysis of metallic salts, presented from the ionic viewpoint. A close study of the tests used in the separation and identification of the metals, and the application of these tests to unknown mixtures. Text, Medicus' "Qualitative Analysis," with Stieglitz's "Qualitative Analysis" and Gooch and Browning's "Qualitative Analysis" for reference. This course should be taken by all intending to follow chemistry as a vocation.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 5.

26. **II. QUALITATIVE ANALYSIS.** — *Acidic.* — For sophomores. A continuation of Course 25.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SEREX.

30. **II. ORGANIC AGRICULTURAL CHEMISTRY.** — For sophomores; juniors and seniors may elect. Embraces the study of the most important groups of organic compounds of plants and animals, the composition of plants, the chemistry of plant growth, plants as food and as industrial material, the composition of animals, the chemistry of digestion, also the study of some of the products related to plants and animals, such as milk, butter, cheese, sugar and alcohol. The treatment of the subject is general, avoiding (so far as possible) complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the

general chemistry of plants and animals and agricultural processes and products. Textbook: Chamberlain's "Organic Agricultural Chemistry."

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor CHAMBERLAIN.

Elective Courses.

51. **I. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. Consists of a systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates and proteins. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and is especially planned for those majoring in chemistry or the other sciences. Textbook: Chamberlain's "Organic Chemistry." Those electing Course 51 are expected to elect Course 52.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

Prerequisites, Chemistry 2 or 5, and Chemistry 26 for those majoring in chemistry.

52. **II. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. A continuation of Course 51.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

53. **III. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. A continuation of Courses 51 and 52, dealing principally with compounds of the benzene series.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

61. **I. QUANTITATIVE ANALYSIS.** — For juniors; seniors may elect. The course includes the gravimetric determination of chlorides, sulfates, iron, the volumetric analysis of acids and bases, and the dichromate method for iron. Text: Smith's "Quantitative Chemical Analysis."

1 class hour.

2 4-hour laboratory periods, credit, 5.

Professor PETERS.

Prerequisite, Chemistry 25. Course 26 is prerequisite for those majoring in chemistry.

62. **II.** For juniors; seniors may elect. A continuation of Course 61. A study of potassium permanganate as a volumetric reagent; limestone is analyzed; phosphorus is determined in soil; and the perchlorate method for potash is carried out. Analytical problems are a part of the work.

2 class hours.

2 4-hour laboratory periods, credit, 6.

Professor PETERS.

63. **III.** For juniors; seniors may elect. A continuation of Course 62. The study of the oxidation reactions of iodine, and precipitating reactions of thiocyanate; Paris green and lead arsenate are analyzed. The work closes with water analysis. By means of assigned readings students are shown the importance of library work. "Methods of the American Public Health Association" is used as a supplementary text.

1 class hour.

2 4-hour laboratory periods, credit, 5.

Professor PETERS.

75. **I. PHYSICAL CHEMISTRY.** — For seniors. A study of the fundamental theories and laws of physical chemistry together with laboratory work which includes the important methods of physicochemical measurements.

3 class hours.

6 laboratory hours, credit, 6.

Assistant Professor SEREX.

Prerequisite, Chemistry 61.

80. **I. PHYSIOLOGICAL CHEMISTRY.** — For seniors. Supplementary to Courses 51, 52 and 53. To those who expect to take up scientific work in microbiology, botany, agronomy, animal husbandry, etc., and who have had Courses 51, 52 and 53, it gives acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 51, 52 and 53 are built up in the living organism or are used as food by it. In the lectures the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory experimental studies are made of the animal body and the processes and products of digestion, secretion and excretion.
3 class hours. 2 2-hour laboratory periods, credit, 5.
Dr. BUTLER.

81. **II. FOOD ANALYSIS.** — For seniors. Primarily for the study of milk and butter analytically. May also include the analyses of other food stuffs for nutritive value or for impurities.
1 class hour. 2 4-hour laboratory periods, credit, 5.
Dr. BUTLER.

Prerequisite, Chemistry 61.

86. **II. REVIEW OF GENERAL CHEMISTRY.** — For seniors. Primarily for students majoring in chemistry; others may elect by permission from the instructor. A knowledge of physical chemistry is desirable. The review of general chemistry is largely theoretical, using as text Alexander Smith's "Introduction to Inorganic Chemistry," or Mellor's "Modern Inorganic Chemistry." Some subjects may be enlarged by special lectures, such as: atomic structure, Werner's co-ordination theory, crystal structure as shown by X-rays.
3 class hours. Credit, 3.
Professor PETERS.

87. **III. HISTORY OF CHEMISTRY.** — For seniors. An historical and biographical study of chemistry and chemists. The aim of the course is: (1) to give the student a comprehensive view of the science as a whole, through a study of the development of new ideas and the establishment of new theories and laws; and (2) to arouse an enthusiastic interest in the subject and an appreciation of the true spirit of scientific research through a sympathetic presentation of the work and lives of the great chemists who have been the creators of the chemistry of to-day. The course will consist of lectures, supplemented by systematic correlated reading, and the preparation of reports or essays.
3 class hours. Credit, 3.
Professor CHAMBERLAIN.

90. **II. SPECIAL WORK IN CHEMICAL PROBLEMS.** — For seniors. An assignment is made to each student and he is expected to learn how research is done. The problem may be in analytical, general, agricultural or industrial chemistry, and is to be continued for two terms.
1 class hour. 8 laboratory hours, credit, 5.
Professor PETERS.

91. **III. SPECIAL WORK IN CHEMICAL PROBLEMS.** — For seniors. As stated under Course 90.
1 class hour. 8 laboratory hours, credit, 5.
Professor PETERS.

92. **II. SPECIAL WORK IN ORGANIC CHEMISTRY.** — For seniors. In this course, as in Courses 90 to 97, the student may give his attention primarily to one line of chemical study for the purpose of becoming acquainted with methods of research. To those whose tastes and interests are in connection with the organic problems of agricultural chemistry, many subjects of study present themselves, among which may be mentioned: proteins, carbohydrates, fats, organic nitrogenous

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compounds in fertilizers and soils and their relation to plants, the commercial production of alcohol from agricultural products, dyes, synthetic medicines, perfumes, etc.

1 class hour.

8 laboratory hours, credit, 5.

Professor CHAMBERLAIN.

Prerequisites, Chemistry 51, 52, 53 and 80.

93. **III. SPECIAL WORK IN ORGANIC CHEMISTRY.** — For seniors. As stated under Course 92.

1 class hour.

8 laboratory hours, credit, 5.

Professor CHAMBERLAIN.

Prerequisite, Chemistry 92.

94. **II. SPECIAL WORK IN PHYSICAL CHEMISTRY.** — For seniors. The field of agricultural chemistry offers many problems that have been attacked through the methods of physical chemistry; such, for example, are the hydrolysis of salts and of minerals and the absorption of salts and fertilizers by soils. For students interested in colloid chemistry a short course in the fundamentals may be pursued in this term with the ultimate object of selecting a problem along this line. This course is designed to familiarize the student with the literature on a special topic, and to give an insight into the methods of research. Each student selects one line of work and follows it through the course, repeating some of the original work.

1 class hour.

8 laboratory hours, credit, 5.

Assistant Professor SEREX.

Prerequisite, Chemistry 75.

95. **III. SPECIAL WORK IN PHYSICAL CHEMISTRY.** — For seniors. As stated under Course 94.

1 class hour.

8 laboratory hours, credit, 5.

Assistant Professor SEREX.

Prerequisite, Chemistry 94.

96. **II. SPECIAL WORK IN PHYSIOLOGICAL AND FOOD CHEMISTRY.** — For seniors. An opportunity for those so interested to pursue the study of some physiological or food problem. This course is intended to familiarize the student with the nature of research under the careful supervision of the instructor. The problems of physiological chemistry are of a varied and interesting character.

1 class hour.

8 laboratory hours, credit, 5.

Dr. BUTLER.

Prerequisite, Chemistry 80.

97. **III. SPECIAL WORK IN PHYSIOLOGICAL AND FOOD CHEMISTRY.** — For seniors. As stated under Course 96.

1 class hour.

8 laboratory hours, credit, 5.

Dr. BUTLER.

Prerequisite, Chemistry 80.

Entomology.

Professor FERNALD, Professor CRAMPTON, Assistant Professor ALEXANDER, Assistant Professor CASSIDY.

Introductory Course 26 or 28 presents a comprehensive view of the relation of insects to man, particularly as crop pests. The most important pests are carefully studied, together with the methods for their control. Courses 50 and 51 are arranged for special study of the pests of any one line of agricultural or horticultural occupation, selected by the student according to his plan of future work, with the intent of making him thoroughly familiar with the pests he will meet in his selected work after graduation, and the means of controlling them. The remaining courses are for the training of men as State or experiment station entomologists; for those going into the care of trees, etc., on estates, or for cities and towns; and as entomological experts, for which the demand has been very large.

Fernald Hall provides excellent lecture rooms and laboratories for this depart-

ment. The laboratories are provided with individual desks, equipped with microscopes and all needed apparatus of all kinds. Dissecting microscopes, binoculars, microtomes, photographic apparatus, glassware and reagents are available for use and electric light and gas are connected with each desk. Two laboratories, one for juniors and seniors, the other for graduate students, are thus equipped. A department library containing all the more important works on insects, supplemented by others on the subject in the main library, and by the private libraries of the professors, make available more than 25,000 books and pamphlets on this subject. In addition, all the current magazines are received and their files are accessible to every one. A card catalogue giving references to the published articles on different insects contains about 65,000 cards, and is probably the largest index of its kind in the world. Spray pumps, nozzles and spraying appliances of all kinds are in use in various parts of the courses, and a large collection of insecticides is accessible for study. Photographic rooms are specially prepared for the photography of insects, and the greenhouses, gardens, orchards and the grounds of the college provide wide opportunities for the study, under natural conditions, of insect pests.

Course 26 or 28 is required of sophomores in the Divisions of Horticulture, Landscape Gardening, Science and Rural Social Science.

26. **III. GENERAL AND ECONOMIC ENTOMOLOGY.** — For sophomores; juniors and seniors may elect. For students who desire some knowledge of insects, but who cannot give more than one term to the subject; also an introduction to the later courses for those who intend to follow entomology further. Touches briefly upon the structure of insects so far as this is needed for such a course; deals with metamorphosis, classification to the larger groups, and discusses the most important methods and materials used for control. The greater part of the time is devoted to special study of the most important insect pests, particularly of New England, showing their modes of life, the injuries they cause, and the best methods of control. In this way the most serious pests of fruit trees, ornamental trees and shrubs, market-garden and green-house pests, those attacking field crops and those affecting animals and man, are treated.

5 class hours.

Credit, 5.

Professor FERNALD.

28. **III. GENERAL AND ECONOMIC ENTOMOLOGY.** — The same as 26 to about May 1; thereafter two class exercises and three laboratory or field exercises per week. In the field the work of insects found will be studied and collections of insects made. Methods of collecting, preparing and mounting insects for collections will be taught. Class limited to 30 members.

5 class hours to about May 1; thereafter,

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor FERNALD.

50. **I. PESTS OF SPECIAL CROPS.** — For juniors; seniors may elect. For students not majoring in entomology. The laboratory work is largely individual in this term. Accordingly, students majoring in subjects other than entomology, but who desire a more complete knowledge of the insects connected with their own major line of work, can obtain it here. A student majoring in floriculture, for example, will devote his laboratory time to a careful study of the insects injuring floricultural crops, learning how to recognize them and their work in their different stages, and the best methods for their control. Courses of this kind are available on the insects attacking field crops, market-garden crops, tree fruits, small fruits, shade trees and shrubs, flowers, forest trees, the domesticated animals, household pests and man. This work may be continued in the winter term also. (See Course 51, **II.**)

3 2-hour laboratory periods, credit, 3.

Professor FERNALD.

Prerequisite, Entomology 26 or 28.

51. **II. PESTS OF SPECIAL CROPS.** — As stated in Course 50, **I.** For students not majoring in entomology. Those who were not able to take Entomology 50 in the fall may take it here. Those who took Entomology 50 in the fall have an opportunity to continue the work during this term also.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Entomology 26 or 28.

52. **I. CLASSIFICATION OF INSECTS.** — For juniors specializing in entomology. Laboratory work on the identification and classification of insects of various groups.

2 2-hour laboratory periods, credit, 2.
Assistant Professor ALEXANDER.

Accompanying Entomology 53.

53. **I. INSECT MORPHOLOGY.** — For juniors specializing in entomology and for other juniors or seniors having the prerequisite. The lectures treat of the external and internal anatomy of insects, particularly those parts used in identification, a knowledge of which is needed, in the accompanying Course 52. In the laboratory the external anatomy of the most important groups is studied, emphasizing the characters used in learning the names of insects, and to teach the methods of using analytical keys.

2 class hours. 3 2-hour laboratory periods, credit, 5.
Professor CRAMPTON.

Prerequisite, Entomology 26 or 28.

54. **I. INSECTICIDES AND THEIR APPLICATION.** — For juniors; seniors may elect. Lectures on the composition, preparation and methods of application of Insecticides.

2 class hours. Credit, 2.
Professor FERNALD.

Prerequisite, Entomology 26 or 28.

55. **II.** Continuation of Course 52, one-half term. Insects and their relation to disease, one-half term.

4 2-hour laboratory periods, credit, 4.
Professors CRAMPTON and ALEXANDER.

56. **II. PESTS OF SPECIAL CROPS.** — For juniors majoring in entomology. Individual laboratory work on the most important insect pests of this country, and the preparation and presentation of bulletin material on them.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

57. **III. CLASSIFICATION OF INSECTS.** — Continuation of Course 55.

2 2-hour laboratory periods, credit, 2.
Professor ALEXANDER.

75. **III. FOREST AND SHADE-TREE INSECTS.** — For juniors; seniors may elect. The lecture work deals with the principles and methods of controlling insects which attack forests and forest products, shade trees, etc. The laboratory periods are devoted to a study of the more important species, their identification, biology and specific control measures. Field work supplements laboratory study if time permits. One entire Saturday for field excursion also required.

1 class hour. 3 2-hour laboratory or field periods, credit, 4.
Assistant Professor ALEXANDER.

Prerequisites, Entomology 26 or 28; 52 and 53 desirable.

76. **I. ADVANCED ENTOMOLOGY.** — For seniors. Studies on insect bionomics; scale insects, their structure, habits, methods of mounting, identification, etc.;

studies of the animals not insects with which entomologists are expected to deal.
2 class hours.

3 2-hour laboratory periods, credit, 5.

Professors CRAMPTON and ALEXANDER.

Prerequisite, Entomology 55.

77. **II. ADVANCED ENTOMOLOGY.** — For seniors. Studies of the life history, habits and methods of control of the important insect pests of the United States; recognition tests of these pests and an examination of the literature on them; methods of bulletin preparation.

3 2-hour laboratory periods, credit, 3.

Assistant Professor ALEXANDER.

Prerequisite, Entomology 76.

78. **III. ADVANCED ENTOMOLOGY.** — For seniors. Classification of insects and of their early stages; principles of classification, the use of literature on entomology and the preparation of bibliographies and indices; the enemies of insects.
1 class hour.

3 2-hour laboratory or field periods, credit, 4.

Professors FERNALD, CRAMPTON and ALEXANDER.

Prerequisite, Entomology 77.

90. **II. EVOLUTION.** — For juniors; seniors may elect. In order to demonstrate the universal scope and operation of the laws of evolution, the course includes a brief sketch of the probable origin and evolution of matter as viewed in the light of modern physical and chemical research; the evolution of the solar system, leading to the formation of the earth; the changes in the earth, preparatory to the production of life; the physical and chemical basis of life; the probable steps in the formation of living matter, and the theories concerning it; the evolution of living things; the developmental history of man, and of the races of mankind; the evolution of human intelligence, languages, culture, institutions, etc., and man's probable future in the light of his past development. Especial consideration is given to the factors of evolution, the basic principles of heredity, variation and similar topics, with particular reference to their application to human welfare; and the recent contributions in the field of entomology to the advancement of our knowledge of these fundamental principles are briefly reviewed.

3 class hours.

Credit, 3.

Professor CRAMPTON.

Courses in Beekeeping.

65. **III. INTRODUCTORY BEEKEEPING.** — For juniors. A detailed study of the normal behavior of the honey bee and the colony as a whole, followed by a study of such practical work of the apiary as is carried on in spring and summer. In so far as possible the laboratory work parallels the lecture work, and both are made to follow the seasonal processes of the colony. Spring management, swarm control and the production and care of the honey crop are covered thoroughly. The course is designed to meet the needs of the horticulturist as well as those of the honey producer, and should be followed by Course 85, I.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor CASSIDY.

85. **I. INTRODUCTORY BEEKEEPING.** — For seniors. A continuation of Course 65 and a completion of the beekeeping year. Fall management, preparation for winter and wintering are studied in detail in lectures and laboratory work. Original problems for student solution. It is highly advisable for those taking Course 65 to take Course 85, and thus complete the annual cycle of beekeeping activity.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CASSIDY.

86. **III. ADVANCED BEEKEEPING.** — For seniors. A study of the special problems with which the beekeeper deals. The diagnosis and control of the various bee diseases, production of wax, sources of nectar, honey, bee anatomy

and physiology, and marketing of the crop are some of the principal topics discussed. The course is designed for those who intend going into honey production either as a principal occupation or as a side line. Field trips to commercial apiaries; laboratory practice in queen rearing.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CASSIDY.

Mathematics and Civil Engineering.

Professor OSTRANDER, Professor MACHMER, Assistant Professor MOORE, Mr. SHUMWAY.

The work of the freshman year is required. It is intended to furnish the necessary drill and groundwork needed for many of the scientific and practical courses of other departments. Thoroughness and accuracy are insisted upon. The advanced work in mathematics is taught from a practical standpoint, and many of its applications to other subjects are given. The courses in surveying and civil engineering are given to furnish the groundwork for a professional career. Special emphasis is given to the subjects bearing on highway construction and maintenance.

For drawing, a room on the north side is used for the draughting. It has draughting tables, T squares, scales, etc., for twenty students. Vernier protractors, parallel rules and steel T squares are available for precise work. A small room is devoted to blueprinting.

In surveying, the department has a considerable number of chains and tapes, two railroad compasses, a builder's level, two dumpy levels, two Y levels and two old levels used for teaching the adjustments. Six transits are available for student use. Two are provided with solar attachments. An omnimeter with vernier reading to ten seconds is available for geodetic work. A hand level, mining aneroid barometer, and prismatic compass are provided for reconnaissance work. A set of Gilmor's needles and a Fairbanks' machine are used for cement testing.

Required Courses.

1. **I. HIGHER ALGEBRA.** — For freshmen. A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, undetermined coefficients, summation of series, variation, continued fractions, determinants, permutations and combinations, logarithms, theory of equations. Reitz and Crathorne's "College Algebra."

4 class hours.

Credit, 4.

Professors MACHMER, MOORE and Mr. SHUMWAY.

2. **II. HIGHER ALGEBRA.** — As stated under Course 1. Required of all who present solid geometry for entrance.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE and Mr. SHUMWAY.

3. **II. SOLID GEOMETRY.** — For freshmen. Theorems and exercises on the properties of straight lines and planes, dihedral and polyhedral angles, prisms, pyramids and regular solids; cylinders, cones and spheres; spherical triangles and the measurement of surfaces and solids. Wentworth and Smith's "Solid Geometry." Required unless accepted for admission.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE and Mr. SHUMWAY.

4. **II. MENSURATION AND COMPUTATION.** — For freshmen. A review of methods of computation, with special emphasis on short and abbreviated processes, together with methods of checking computations and of forming close approximations; use of slide rule. Also the graph, mensuration of plane and solid figures, weights and measures and elementary mechanism. Numerous practical problems are selected from such subjects as the following: the mathematics of woodworking; rough lumber; general construction; forestry methods in heights of trees; pulleys,

belts and speeds; power and its transmission; dairying; agronomy; computation of areas from simple measurements.

2 class hours.

Credit, 2.

Professor MACHMER and Mr. SHUMWAY.

5. **III. PLANE TRIGONOMETRY.** — For freshmen. The trigonometric functions as lines and ratios; proofs of the principal formulas, transformations; inverse functions, use of logarithms; the applications to the solution of right and oblique triangles; practical applications. Bowser's "Elements of Plane and Spherical Trigonometry."

3 class hours.

Credit, 3.

Professors MACHMER, MOORE and Mr. SHUMWAY.

Elective Courses.

26. **II. PLANE SURVEYING.** — For sophomores; juniors and seniors may elect. The elements of the subject, including the adjustment and use of the usual instruments. Textbook and lectures.

3 class hours.

Credit, 3.

Professors OSTRANDER and MOORE.

27. **III. PLANE SURVEYING.** — For sophomores; juniors and seniors may elect. As stated under Course 26. Includes field work.

3 2-hour laboratory periods, credit, 3.

Professors OSTRANDER and MOORE.

Prerequisite, Mathematics 26.

50. **I. ANALYTIC GEOMETRY.** — For juniors; seniors may elect. A discussion of the geometry of the line, the circle, conic sections, and the higher plane curves. Fine and Thompson's "Co-ordinate Geometry."

3 class hours.

Credit, 3.

Professor MACHMER.

Prerequisites, Mathematics 1, 2, 3 and 5.

51. **II. DIFFERENTIAL AND INTEGRAL CALCULUS.** — For juniors; seniors may elect. A first course in the subject, with some of the more important applications. Granville's "Differential and Integral Calculus."

5 class hours.

Credit, 5.

Assistant Professor MOORE.

Prerequisites, Mathematics 1, 2, 3 and 5.

52. **III. INTEGRAL CALCULUS.** — For juniors; seniors may elect. A continuation of Course 51.

5 class hours.

Credit, 5.

Assistant Professor MOORE.

Prerequisite, Mathematics 51.

53. **II. ELEMENTARY STRUCTURES.** — For juniors; seniors may elect. An elementary course in roofs and bridges. Textbook and lectures.

3 class hours.

1 2-hour laboratory period, credit, 4.

Professor OSTRANDER.

75. **I. HYDRAULICS AND SANITARY ENGINEERING.** — For seniors; juniors may elect. Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment. Textbook and lectures.

5 class hours.

Credit, 5.

Professor OSTRANDER.

76. **I. MATERIALS OF CONSTRUCTION. FOUNDATIONS AND MASONRY CONSTRUCTION.** — For seniors; juniors may elect. Textbook and lectures.

5 class hours.

Credit, 5.

Professor OSTRANDER.

Part II.

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77. **II. ROADS AND RAILROADS.** — For seniors; juniors may elect. Topographic and higher surveying, highway construction, earthwork, pavements and railroad construction. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

78. **III. ROADS AND RAILROADS.** — For seniors; juniors may elect. As stated under Course 77.

3 2-hour laboratory periods, credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 77.

Microbiology.

Professor MARSHALL, Assistant Professor BRADLEY, Mr. MORTENSEN, Miss GARVEY.

Three objectives are sought in the arrangement of the courses following: (1) Introductory courses (50 and 51) needed in the general training of every college student. (2) An introductory course followed by a specific course (as 80, 81, 82, 83), necessary to every student engaged in the Division of Agriculture, with which the specific course deals. (3) Introductory courses (50 and 51) followed by Courses 52, 75, 76 and 81, preparatory for students who are aiming to specialize in agricultural microbiology. (Courses 75, 76 and 81 are adapted to those having Courses 50 and 51 only, and are also adapted to those majoring in microbiology.)

The microbiological work is carried on in a building especially designed for it. There are 4 class laboratory rooms, 8 private laboratory rooms, 1 lecture room, 5 incubator rooms, 3 sterilizing rooms, 3 hood rooms, 3 washing rooms, 3 inoculating rooms, 3 weighing rooms, an animal room, a photographic and dark room, a sub-basement refrigerator room, a library and 4 office rooms.

The class laboratory rooms are so arranged that individual desks are available for student use. Hot and cold water and gas connections are convenient for each desk; high-pressure steam and electric connections are also available. The building is well lighted and of sanitary construction; all the walls are of brick, and the building is fireproof.

The library is equipped with such books and current periodicals as are useful in the conduct of bacteriological work and investigations. Twenty-four scientific magazines are available regularly.

There are incubators, both electric and gas, hot-air sterilizers, ordinary steam sterilizers, autoclaves, an inspissator, blood-testing apparatus, vacuum apparatus, air-pressure apparatus, shaker, grinder, centrifugal machines, a water still of 5 gallons per hour capacity, Hoskin's combustion furnace, a balopticon, complete microphotographic equipment, microscopes, microtome, and such other apparatus, glassware and chemicals as are needed for extensive and intensive work.

Required Course.

30. **III. ELEMENTARY MICROBIOLOGY.** — Required of sophomores majoring in the agricultural division. Designed to make micro-organisms real and significant to the student who seeks some knowledge of their activities. An attempt is made to place them among living organisms, to demonstrate their wide distribution in nature and to indicate what they do. Some of the essential methods of control and propagation are reviewed. Owing to the time limit, this course may be regarded as an introductory survey course only.

6 laboratory hours, credit, 3.

Mr. MORTENSEN.

33. **III. PHYSIOLOGY.** — For sophomores. Offered for the year 1925-26.
3 class hours.

1 2-hour laboratory period, credit, 4.

Miss GARVEY.

Elective Courses.

50. **I, II and III. INTRODUCTORY AND GENERAL MICROBIOLOGY.** — For juniors; seniors may elect. Aims to provide elementary basis for microbial studies and interpretation, to enable students to pursue special pertinent courses

which will serve as supports in practical electives or majors, and to furnish students with such material as will be valuable in understanding public health problems.
2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor MARSHALL and Mr. MORTENSEN.

51. **II and III. MORPHOLOGICAL, CULTURAL AND PHYSIOLOGICAL MICROBIOLOGY.** — For juniors; seniors may elect. Types of micro-organisms, technic of handling, methods of culture and functions of micro-organisms are considered. This course is fundamental to all advanced and extended microbiological studies.

10 laboratory hours, credit, 5.

Mr. MORTENSEN.

Prerequisite, Microbiology 30 or 50.

52. **III. ADVANCED MORPHOLOGICAL, CULTURAL AND PHYSIOLOGICAL MICROBIOLOGY.** — For juniors; seniors may elect. Prepares for a more intimate knowledge of microbiological agricultural problems. To accomplish this object it is necessary to provide more advanced technique and methods of culture, together with a more extensive knowledge of micro-organisms and their functions.

10 laboratory hours, credit, 5.

Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

60. **I. PUBLIC HEALTH.** — For juniors; seniors may elect. Considers the relation of the human body to its environment in the maintenance of health and the production of disease. This study is based upon human anatomy and physiology. The individual, as a member of society, governed by natural laws, is also of fundamental importance. A knowledge and an interpretation are sought of the usual agencies connected with health and disease, as air, water, sewage, dairy products, foods, drugs, carriers, vaccines and their prophylactic means, biological products as diagnostic and remedial materials and public health practices now recognized. Diseases of public health significance are reviewed, their control considered and their social values discussed.

3 class hours.

Credit, 3.

Professor MARSHALL and Miss GARVEY.

61. **II. PUBLIC HEALTH.** — For juniors; seniors may elect. As stated under Course 60.

3 class hours.

Credit, 3.

Professor MARSHALL and Miss GARVEY.

62. **III. PUBLIC HEALTH.** — For juniors; seniors may elect. As stated under Course 60.

3 class hours.

Credit, 3.

Professor MARSHALL and Miss GARVEY.

75. **II. AGRICULTURAL MICROBIOLOGY.** — For seniors; juniors may elect. This general comprehensive course is designed to cover in an elementary manner those subjects only which confront the student of general agriculture, — the microbiological features of air, water, sewage, soil, dairy, fermentations, food, vaccines, antisera, microbial plant infections, methods and channels of infections, immunity and susceptibility, microbial infections of man and animals, methods of control or sanitary and hygienic practices.

10 laboratory hours, credit, 5.

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Prerequisite, Microbiology 51.

76. **III. AGRICULTURAL MICROBIOLOGY.** — For seniors; juniors may elect. As stated under Course 75.

10 laboratory hours, credit, 5.

The DEPARTMENT.

Prerequisite, Microbiology 75.

80. **II. SOIL MICROBIOLOGY.** — For seniors; juniors may elect. Such subjects as the number and development of micro-organisms in different soils; the factors which influence their growth, food, reaction, temperature, moisture and aeration; the changes wrought upon inorganic and organic matter in the production of soil fertility, ammonification, nitrification and denitrification; fixation of nitrogen symbiotically and non-symbiotically; methods of soil inoculation receive attention.

10 laboratory hours, credit, 5.
Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

81. **I. HYGIENIC MICROBIOLOGY.** — For seniors; juniors may elect. An attempt is made to select certain material which is basic to public hygiene and sanitation, as applied to man and animals. The microbiology of water supplies, food supplies, vaccines, antisera or antitoxins; the channels by which micro-organisms enter the body, the influence of body fluids and tissues upon them, body reactions with micro-organisms (susceptibility and immunity); the micro-organisms of some of the most important infectious diseases, methods of control, including disinfectants and disinfection, antiseptics, antisepsis and asepsis, are treated.

10 laboratory hours, credit, 5.
Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

82. **I. DAIRY MICROBIOLOGY.** — For seniors; juniors may elect. Special emphasis is placed upon milk supplies. The microbial content of milk, its source, its significance, its control; microbial taints and changes in milk; groups or types of organisms found in milk; milk as a carrier of disease-producing organisms; the value of straining, aeration, clarification, centrifugal separation, temperature, pasteurization; the abnormal fermentations of milk; bacteriological milk standards and their interpretation; ripening of milk and cream; the bacterial content of butter; a passing survey of the microbiology of cheeses; a study of special dairy products, as ice cream, condensed milk, artificial milk drinks (the products of microbial actions), represents a list of topics considered.

10 laboratory hours, credit, 5.
Professor MARSHALL and Miss GARVEY.

Prerequisite, Microbiology 51.

83. **III. FOOD MICROBIOLOGY.** — For seniors; juniors may elect. A study of the principles of food preservation, and food preservation by means of drying, canning, refrigerating and addition of chemicals, is pursued. Food fermentations, as illustrated by bread, pickles, sauerkraut, ensilage, vinegar, wine, etc., are examined. Decomposition of foods, as may be seen in meat, oysters, fish, milk, etc., as well as diseased and poisonous foods, receive consideration. Contamination of food supplies by means of water, sewage, handling, exposure, diseased persons, etc., is of especial significance, and is demonstrated by laboratory exercises. Laboratory inspection of foods is now a subject of great import and is given attention.

10 laboratory hours, credit, 5.
Professor MARSHALL and Miss GARVEY.

Prerequisite, Microbiology 51.

Physics.

Professor POWERS, Mr. ALDERMAN.

The fundamental and basic importance of the laws and phenomena of physics makes necessary no explanation of the introduction of this subject into the curriculum of an agricultural college. The logical development of the subject emphasizes the importance of physics as a science in itself. Special emphasis is laid, however, on the correlation of the principles studied with the sciences of agricul-

ture, botany, chemistry and zoölogy, thus furnishing an extra tool by use of which the student's work in all the subjects may be more effective.

In Courses 25, 26 and 27 the subject-matter is presented with the idea of its special application primarily in the work in agriculture and general science. The full year's work is required of all students continuing work specifically in the Division of Science. Course 25 is required of all students. The subject-matter is especially selected and arranged for its practical application rather than its theoretical development. Courses 50, 51 and 52 are advised for students in chemistry, general biology, microbiology and general science. The subject-matter is selected, and the courses developed, with the idea of making the student proficient in laboratory manipulation. Sufficient theory is given in connection with the work to enable the student to apply the knowledge and practice thus gained in the department indicated above.

The department has at its command a building on the east campus, containing a general lecture room and laboratory for sophomore work, a laboratory for junior work, and in the basement one small laboratory for quantitative work in light measurement. There is also in the basement a fairly well-equipped shop for the repair and construction of apparatus used in the department work. The usual apparatus for the demonstration in the lecture room is in the possession of the department.

Required Courses.

25. **I. GENERAL PHYSICS.** — For sophomores. Mechanics of solids and fluids. This course includes statics, with equilibrium of rigid bodies, work, energy and friction; kinetics, considering rectilinear motion and motion in a curved path; harmonic motion; rotation of rigid bodies, including kinematics of rotation; liquids and gases, with properties of fluids at rest and in motion; properties of matter and its internal forces, including elasticity, capillarity, surface tension. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professor POWERS and Mr. ALDERMAN.

26. **II. ELECTRICITY AND MAGNETISM.** — For sophomores; juniors and seniors may elect. Includes such subject-matter as magnetism, electrostatics, electric currents with their production, chemical, heating and mechanical effects; battery cells, measurement of voltage, current flow and resistance, motors and generators. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professor POWERS and Mr. ALDERMAN.

27. **III. HEAT AND LIGHT.** — For sophomores; juniors and seniors may elect. Thermometry, expansion, colorimetry and specific heat, transmission of heat, changes of state, radiation and absorption. Wave theory of light, optical instruments, analysis of light, color, interference, diffraction, polarization. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professor POWERS and Mr. ALDERMAN.

Elective Courses.

50. **I. 51. II. 52. III. EXPERIMENTAL PHYSICS.** HEAT, LIGHT, ELECTRICITY AND MAGNETISM. — For juniors; seniors may elect. This course consists of a series of physical measurements in the laboratory, accompanied by lectures. The lectures deal chiefly with the methods and principles involved in the laboratory work. High-grade instruments of precision are employed in the laboratory work, and the student is expected to acquire some ability to make accurate observations. The primary object of the course is to develop in the student scientific habits of thinking by direct personal observation of physical phenomena. 1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor POWERS.

Prerequisite, Physics 27.

55. **III. ANALYTICAL MECHANICS.** — For juniors; seniors may elect. An introduction to the application of the calculus to the mechanics of solids; statics and kinetics of rigid bodies; elasticity; vector analysis. For students who have taken or are taking Mathematics 52.

3 class hours.

Credit, 3.

Mr. ALDERMAN.

75. **I.** 76. **II.** 77. **III. THEORY OF LIGHT.** — For seniors. Propagation of light, formation of optical images, photography, optical instruments, interference, diffraction, spectroscopy, optical phenomena of the atmosphere, polarization and double refraction, magneto-optics, photo-electricity, radiation, electromagnetic waves, X-rays and crystal structure, electron theory, principle of relativity. Not given 1925-26.

3 class hours.

Credit, 3.

Professor POWERS.

Prerequisite, Mathematics 51.

Veterinary Science and Animal Pathology.

Professor GAGE, Assistant Professor LENTZ.

The courses in veterinary science have been arranged to meet the needs (1) of students who propose following practical agriculture; (2) of prospective students of human and veterinary medicine; and (3) of teachers and laboratory workers in the biological sciences.

The department occupies a modern laboratory and hospital stable, built in accordance with the latest principles of sanitation. Every precaution has been taken in the arrangement of details to prevent the spread of disease, and to provide for effective heating, lighting, ventilation and disinfection.

The main building contains a large working laboratory for student use, and several small private laboratories for special work. There is a lecture hall, a museum, a demonstration room, a photographing room and a workshop. The hospital stable contains a pharmacy, an operating hall, a post-mortem and dissecting room, a poultry section, a section for cats and dogs, and 6 sections, separated from each other, for horses, cattle, sheep and swine. The laboratory equipment consists of a dissectible Auzoux model of the horse and Auzoux models of the foot and the leg, showing the anatomy and the diseases of every part. The laboratories also have modern, high-power microscopes, microtomes, incubators and sterilizers, for work in every department of veterinary science, including pathology, serology and parasitology. There are skeletons of the horse, the cow, the sheep, the dog and the pig, and a growing collection of anatomical and pathological specimens. The lecture room is provided with numerous maps, charts and diagrams.

Elective Courses.

50. **II. VETERINARY HYGIENE AND STABLE SANITATION.** — For juniors; seniors may elect. Familiarizes students with the relation of water, food, air, light, ventilation, care of stables, disposal of excrement, individual hygiene, etc., to the prevention of disease in farm animals.

5 class hours.

Credit, 5.

Assistant Professor LENTZ.

53. **I. GROSS VETERINARY ANATOMY.** — For juniors; seniors and graduate students may elect. The detailed study of the skeleton is followed by dissection of the muscular system and the study of joints.

2 3-hour laboratory periods, credit, 3.

The DEPARTMENT.

54. **II. GROSS VETERINARY ANATOMY.** — For juniors; seniors and graduate students may elect. The continuation of Veterinary 53, consisting of dissection

and study of the circulatory, nervous, digestive, respiratory, and genito-urinary systems.

2 3-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Veterinary 53.

75. **I. COMPARATIVE (VETERINARY) ANATOMY.** — For seniors; juniors may elect. The anatomy of the horse is studied in detail, and that of other farm animals, particularly the ox. This course is essential for those students wishing to elect Course 77. It is a lecture and demonstrational course and open to all students interested. It is not a course in dissection anatomy.

5 class hours.

Credit, 5.

Assistant Professor LENTZ.

76. **II. GENERAL VETERINARY PATHOLOGY.** — For seniors; juniors may elect. Fundamental, general, pathological conditions, as for example, inflammation, fever, hypertrophy, atrophy, etc., a knowledge of which is essential in prevention, diagnosis, and treatment of disease, are studied. The course in pathology is followed by a brief consideration of materia medica, therapeutic measures, and poisonous plants.

5 class hours.

Credit, 5.

Assistant Professor LENTZ.

77. **III. APPLIED GENERAL PATHOLOGY.** — For seniors; juniors may elect. This course is a continuation of Course 76. Particular attention is given to the etiology, the pathogenesis and the prophylaxis of the communicable and non-communicable diseases of the different species of domesticated animals. Lectures and demonstrations.

5 class hours.

Credit, 5.

Assistant Professor LENTZ.

Prerequisites, Veterinary 75 or Veterinary 78, 79 and 80.

78. **I. ESSENTIALS OF GENERAL PATHOLOGY.** — For seniors; juniors may elect. Introduces students to some of the essential anatomical, histological and general physiological phenomena essential to the understanding of some of the simple general pathological conditions found in domestic animals. Some of the common methods of diagnosis are considered in the laboratory. The various chemical and biological reactions and tests are presented from the standpoint of pure science, showing applications of chemistry and biology. The course serves to educate liberally and stimulate in the student of agriculture the appreciation of some of the methods used in animal pathology for detecting and controlling some of the more common animal diseases. Lectures, demonstration and laboratory work.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

79. **II. ESSENTIALS OF GENERAL ANIMAL PATHOLOGY.** — For seniors; juniors may elect. A continuation of Course 78, devoted to a study of some of the common pathological conditions by means of prepared sections, the aim being to demonstrate to the student abnormal animal histological structures commonly observed when material from various cases of animal diseases is prepared for microscopical study. Some of the biological products used in protecting animals against disease are considered.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 78.

80. **III. ESSENTIALS OF GENERAL ANIMAL PATHOLOGY.** — For seniors; juniors may elect. As stated in Courses 78 and 79.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 79.

85. **I. AVIAN PATHOLOGY.** — For seniors; juniors may elect. A course in poultry diseases. The object is to present information concerning the common diseases of poultry, their etiology, diagnosis and prevention. Consists of a systematic study of the diseases of the alimentary tract, liver and abdominal region, followed by a study of the diseases of the respiratory system, circulation and kidneys. The important disease-producing external and internal parasites are considered; also diseases of the skin and reproductive organs. Lectures and demonstrations.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

86. **II. AVIAN PATHOLOGY.** — For seniors; juniors may elect. As stated under Course 85, also devoted to the study of some of the special diseases of poultry. Recent methods used in the control of these diseases are considered an opportunity offered the student for demonstrating various disease processes by means of prepared slides. Lectures, demonstrations and laboratory work.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 85.

87. **III. AVIAN PATHOLOGY.** — For seniors; juniors may elect. As stated under Courses 85 and 86.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 86.

Zoölogy and Geology.

Professor GORDON, Mr. RING.

The facts and principles of the sciences of zoölogy and geology have important applications in industry and the arts, and with those of their sister sciences form a body of knowledge of value and interest with which the educated man finds it necessary to gain a close familiarity. The elective courses in this department stand as offerings to students who wish to supplement their work in other departments, or who, for any reason, wish to enlarge their knowledge in either zoölogy or geology. Students are encouraged to consult the department about any courses which may be available to them, and which might prove necessary or helpful for any line of work they may wish to follow.

The building occupied jointly by the department of entomology and the department of zoölogy and geology has for the work in zoölogy and geology laboratories equipped with gas, compound microscopes and the accessories needed for study in these subjects. The Zoölogical Museum has a representative collection of several thousand specimens of animals, and is drawn upon for material illustrating the various courses.

ZOÖLOGY.

Required Course.

26. **II. GENERAL PRINCIPLES OF ZOÖLOGY.** — For sophomores. An introductory course dealing with the basic features of animal structure, functions of organs, relations of animals to each other and some of the important principles and doctrines that have grown out of the study of animals.

2 class hours.

2 2-hour laboratory periods, credit, 4.
The DEPARTMENT.

Elective Courses.

50. **I. SYNOPSIS INVERTEBRATE ZOÖLOGY; THE ANNELIDS AND THE ARTHROPODS.** — For juniors; seniors may elect. A study of the classes and orders of the annelid worms and the arthropods, exclusive of insects.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

51. **II. SYNOPSIS INVERTEBRATE ZOÖLOGY; THE MOLLUSCS AND THE ECHINODERMS.** — For juniors; seniors may elect. A study of the classes and orders of the molluscs and echinoderms.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

52. **III. SYNOPSIS INVERTEBRATE ZOÖLOGY; MISCELLANEOUS INVERTEBRATE PHYLA.** — For juniors; seniors may elect. A study of various selected phyla of the non-vertebrated animals. For those who have not taken either or both of the preceding courses in synoptic invertebrate zoölogy this course may include representatives of the different phyla named therein.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

53. **I. ELEMENTS OF MICROSCOPIC TECHNIQUE.** — For juniors; seniors may elect. Gives the usual methods of preparing material for microscopic examination, including fixing, embedding, sectioning and differentiation by stains. May be supplemented by a study of selected normal tissues in connection with their physiological properties.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

75. **I. SPECIAL ZOÖLOGY.** — Juniors, seniors and graduates may apply for such special work as they are qualified to undertake.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

76. **II. SPECIAL ZOÖLOGY.** — Same as Course 75.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

77. **III. SPECIAL ZOÖLOGY.** — Same as Course 75.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

79. **III. ORNITHOLOGY.** — For juniors; seniors may elect. The taxonomic characters, distribution and habits of birds.

1 class hour. 2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoölogy 26.

GEOLOGY.

52. **III. GENERAL GEOLOGY.** — For juniors; seniors may elect. A course in the various aspects of physical geology, dealing with materials of the earth's crust; their nature, origin and arrangement and the changes which they undergo.

2 class hours. 3 2-hour laboratory periods, credit, 5.
Professor GORDON.

DIVISION OF THE HUMANITIES.

Professor LEWIS.

Economics and Sociology.Professor MACKIMMIE, Professor LEWIS, Professor SIMS.¹

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

The courses in economics and sociology are planned with the purpose of giving the student that knowledge and understanding of the important factors and problems in this field of study and life which every active citizen and educated man ought to have.

Required Course.

25. I. INTRODUCTION TO ECONOMIC PRINCIPLES AND PROBLEMS. — For sophomores. For description of course see Course 50, **I**.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

Elective Courses.

26. II. CIVILIZATIONS, ANCIENT AND MODERN. — For sophomores; juniors and seniors may elect. The evolutionary origin and history of man; characteristics of primitive man, departure from the animal status and beginnings of civilization; origin and development of industries, arts and sciences; the evolution of languages, warfare, migrations and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern development; characteristic features of the leading civilizations and races of ancient and modern times; beneficial and dangerous factors in American life in view of the history of human civilization. Not given 1925-26.

5 class hours.

Credit, 5.

50. I. INTRODUCTION TO ECONOMIC PRINCIPLES AND PROBLEMS. — For juniors and seniors. Definitions of economic terms, such as wealth, capital, value, etc.; factors of production, exchange and consumption; principles of economic production, supply and demand, diminishing returns, division of labor, productive organization, concentration of capital and labor, trust and monopoly problems, public control of production and distribution; principles of exchange, theories of value, money and its problems; international trade, tariff and free trade theories, American merchant marine, reciprocity, and trade treaties; forms of income, wages, interest, rent, profits and the forces which govern them; principles of spending, economy, luxury, conservation of individual and national resources; principles and agencies for saving, investments, banks, building associations, insurance of all kinds; schemes for social organization; socialism, communism, industrial democracy. Textbook and readings.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

51. II. BUSINESS AND INDUSTRY. — For juniors and seniors. The forms, organization, administration and labor problems of business. Methods of organizing, financing and administering corporations and partnerships; forms of business administration, wholesaling, jobbing, retailing, advertising, credits and collections; system of industrial remuneration for wage earners, co-operation and preserving industrial peace; problems concerned with protective legislation for workmen and employers, sweated industries, prison labor, child labor and industrial education.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

¹ Absent on leave.

52. **III. PUBLIC FINANCE, TAXATION, MONEY AND BANKING.** — For juniors and seniors. Systems and problems of taxation as they are found in Europe and America; objects for spending public revenue; public debts and methods of organizing them; systems of money and currency problems of America; types, methods and functions of banks; economic and financial crises and depressions in the United States; modern war finance. Readings and lectures.
5 class hours.

Credit, 5.

Professor MACKIMMIE.

75. **I. SOCIAL INSTITUTIONS AND SOCIAL REFORMS.** — For seniors; juniors by permission. Social institutions, such as the family, the State, property, religions; and such current problems as eugenics, race suicide, divorce, crime and delinquent classes, prison reform, prevention and treatment of dependents and defectives, poverty, its causes and preventions; constructive modern social reform movements for insurance of wage earners, protection of childhood, assurance of safety, health and play time for all classes. The correctional and charitable institutions of Massachusetts are studied in considerable detail.
5 class hours.

Credit, 5.

Professor SIMS.

History and Government.

Professor LEWIS, Professor MACKIMMIE.

Required Courses.

25. **II. AMERICAN GOVERNMENT.** — For sophomores. A study of the structure and operation of the machinery of our government; also a study of the history of its development from its inception to the present day.
3 class hours.

Credit, 3.

Professor LEWIS.

27. **III. CITIZENSHIP.** — For sophomores. A course designed to acquaint the student with the most important and immediate problems of government — national, State and local — so that as a citizen he may make an intelligent contribution towards their solution. Lectures and discussions.
2 class hours.

Credit, 2.

Professor LEWIS.

Elective Courses.

50. **I. GOVERNMENT.** — For juniors and seniors. Forms and working methods of the government of Great Britain, Germany, France, Russia, Switzerland, New Zealand and Canada; historic types and theories of government; forms and methods of Federal, State and local governments in America; progress and problems of democracy and new reform movements in organization and administration; new tendencies towards social legislation and extension of governmental control.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

51. **II. MODERN EUROPEAN HISTORY.** — For juniors and seniors. The modern history of the principal countries of Europe, especially the great movements and revolutions that developed the nations up to the present generation.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. **III. EUROPEAN HISTORY SINCE 1870.** — For juniors and seniors. The Franco-Prussian War and the formation of the German Empire, the unification of Italy, the Third French Republic, European Expansion in the East, the Russo-Japanese War, and the origin, events and probable results of the War of 1914. While a continuation of Course 51, this course will be complete in itself, and may be elected by those who have had no history training. Its aim is to provide the basis for an understanding of present-day conditions, and for an intelligent participation in world affairs.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

Languages and Literature.

Professor LEWIS, Professor PATTERSON, Professor ASHLEY, Professor JULIAN, Assistant Professor PRINCE,
Assistant Professor RAND, Miss GOESSMANN, Mr. JACKSON, Mr. HALLIDAY, Mr. KELLER.

ENGLISH.

Required Courses.

1. **I.** 2. **II.** 3. **III.** ENGLISH. — For freshmen. Composition. Intended to teach straight thinking, sound structure, clear and correct expression. Lectures, recitations, theme writing and conferences.
3 class hours. Credit, 3.

Professors PATTERSON, PRINCE, RAND and Mr. JACKSON.

25. **I.** 26. **II.** 27. **III.** ENGLISH. — For sophomores. A general reading course in English literature.
2 class hours. Credit, 2.

Professor PATTERSON and Miss GOESSMANN.

28. **I.** 29. **II.** 30. **III.** ENGLISH. — For sophomores. English composition, oral and written.
1 class hour. Credit, 1.

Professors PATTERSON, PRINCE, RAND and Mr. JACKSON.

Elective Courses in English Language and Literature.

50. **I.** ENGLISH POETRY OF THE ROMANTIC PERIOD (1925-26). — Alternates with Course 53. For juniors; seniors may elect. A course in history, appreciation and understanding. Some of the writers studied are Gray, Goldsmith, Burns, Scott, Wordsworth, Coleridge, Byron, Keats and Shelley.
3 class hours. Credit, 3.

Professor PATTERSON.

51. **II.** ENGLISH POETRY IN THE NINETEENTH CENTURY (1926-27). — Alternates with Course 54. For juniors; seniors may elect. In general, this course is like Course 50. Tennyson, Browning, Mrs. Browning, Arnold, Clough, the Rossettis, Morris, Swinburne and others.
3 class hours. Credit, 3.

Professor LEWIS.

57. **III.** ENGLISH POETRY IN THE NINETEENTH CENTURY (1926-27). — Alternates with Course 58. For juniors; seniors may elect. As stated under Course 51.
3 class hours. Credit, 3.

Professor LEWIS.

52. **III.** ENGLISH WRITERS FROM MILTON TO POPE. — For juniors; seniors may elect. A survey course that emphasizes the leading writers, literary currents and the thought of the period. Some of the writers studied are Milton, Dryden, Addison, Swift and Pope.
3 class hours. Credit, 3.

Professor PATTERSON.

53. **I.** ENGLISH PROSE OF THE ROMANTIC PERIOD (1926-27). — For juniors; seniors may elect. A course in English prose paralleling Course 50. Some of the writers studied are Goldsmith, Coleridge, Lamb, DeQuincey and Hazlitt.
3 class hours. Credit, 3.

Professor PATTERSON.

54. **II.** ENGLISH PROSE IN THE NINETEENTH CENTURY (1925-26). — For juniors; seniors may elect. Parallels Course 51. Among the writers considered will be Macaulay, Carlyle, Ruskin, Newman and Arnold.
3 class hours. Credit, 3.

Professor LEWIS.

58. **III. ENGLISH PROSE IN THE NINETEENTH CENTURY (1925-26).** — For juniors; seniors may elect. As stated under Course 54. Alternates with Course 57.
3 class hours.

Credit, 3.

Professor LEWIS.

55. **II. AMERICAN LITERATURE.** — For juniors; seniors may elect. A course in the chief American prose writers; among those studied being Franklin, Brockden, Brown, Irving, Cooper, Poe, Hawthorne, Amerson, Thoreau, Lowell, Holmes, Parkman.

3 class hours.

Credit, 3.

Assistant Professor PRINCE.

56. **III. AMERICAN LITERATURE.** — For juniors; seniors may elect. A course in the chief American poets; among those studied being Freneau, Bryant, Poe, Emerson, Longfellow, Whittier, Holmes, Lowell, Whitman, Lanier.

3 class hours.

Credit, 3.

Assistant Professor PRINCE.

60. **I. THE LITERATURE OF RURAL LIFE.** — For juniors; seniors may elect. A critical and appreciative study of writers, both in prose and poetry, who have interpreted nature from the viewpoint of the lover of country life, and those who have idealized agriculture, horticulture and other rural pursuits, together with those who have upheld as an ideal the development of a rural environment in cities.

3 class hours.

Credit, 3.

Miss GOESSMANN.

61. **II. THE LITERATURE OF RURAL LIFE.** — For juniors; seniors may elect. As stated under Course 60.

3 class hours.

Credit, 3.

Miss GOESSMANN.

Prerequisite, English 60.

65. **I. ADVANCED COMPOSITION.** — For juniors; seniors may elect. Advanced work in expository writing, based upon specimens by contemporary authors and upon the personal experience of the student. Particular attention is given to organization, diction and style.

3 class hours.

Credit, 3.

Assistant Professor RAND.

66. **II. ADVANCED COMPOSITION.** — For juniors; seniors may elect. The preparation of theses and similar manuscripts upon subjects selected by the student. The foundation of this course lies in an orderly accumulation of material followed by an intelligent and readable interpretation of its significance.

3 class hours.

Credit, 3.

Assistant Professor RAND.

67. **III. ADVANCED COMPOSITION.** — For juniors; seniors may elect. Work in journalistic and fictional narrative with supplementary reading.

3 class hours.

Credit, 3.

Assistant Professor RAND.

75. **III. PROSE FICTION.** — The short story or the novel. For seniors; juniors may elect. Readings, reports and discussions. Not offered in 1925-26.

3 class hours or library equivalents.

Credit, 3.

79. **II. SHAKESPEARE.** — For seniors; juniors may elect. A cursory survey of the origin and rise of English drama is followed by the reading of about fifteen of Shakespeare's plays, selected to indicate the evolution of the dramatist and to

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emphasize the various phases of his art. Every attempt is made to deepen the student's appreciation of the personalities to be found in the plays, and of the beauty of the many memorable poetic passages.

3 class hours.

Credit, 3.

Assistant Professor RAND.

80. **III. MODERN DRAMA.** — For seniors; juniors may elect. This course traces the development of English drama from the time of the Restoration to the present day. The purpose of the course is to impart an intelligent and sympathetic interest in the theatre of the Twentieth Century.

3 class hours.

Credit, 3.

Assistant Professor RAND.

PUBLIC SPEAKING.

Elective Courses.

50. **I. ARGUMENTATION.** — For juniors; seniors may elect. Presents the fundamental principles of argumentation as applied to oral and written discourse, and develops in the student power to handle argument convincingly and persuasively. Lectures, discussions of leading questions of the day, practice in briefing and the writing of forensics. The course is recommended for those who desire to enter the intercollegiate debates.

3 class hours.

Credit, 3.

Assistant Professor PRINCE.

51. **II. OCCASIONAL ORATORY.** — For juniors; seniors may elect. A study of the principles and the practice of formal oratory; the preparation and delivery of one original oration; prescribed reading in oratory. The course is recommended for those who wish to enter the Flint Contest.

3 class hours.

Credit, 3.

Assistant Professor PRINCE.

French, Spanish and Music.

Professor ASHLEY, Mr. HALLIDAY.

The aim of the courses in French and Spanish is to give the student a practical knowledge of these languages for the purpose of wider reading and research, to introduce him to some of their treasures in art and science, and through the literature to acquaint him with the people. In the elementary courses as much time as possible is given to oral work, to develop a speaking, as well as a reading, knowledge of the tongue.

FRENCH.

Required Courses.

1. **I. 2. II. 3. III. ELEMENTARY FRENCH.** — For freshmen; sophomores, juniors and seniors may elect. The essentials of grammar are rapidly taught and will be accompanied by as much reading as possible. Required of freshmen presenting German for entrance who do not continue that language and have not studied French.

3 class hours.

Credit, 3.

Professor ASHLEY.

4. **I. 5. II. 6. III. INTERMEDIATE FRENCH.** — For freshmen; sophomores, juniors and seniors may elect. Training for rapid reading. The reading of a number of short stories, novels and plays; composition, reports on collateral reading from periodicals and scientific texts in the library.

3 class hours.

Credit, 3.

Mr. HALLIDAY.

Prerequisite, required of freshmen who present two years of French for entrance and do not take German.

Elective Courses.

25. **I. INTERMEDIATE FRENCH.** — For sophomores; juniors and seniors may elect. Training for rapid reading; the reading of a number of short stories, novels and plays; readings from periodicals and scientific texts in the library.
3 class hours.

Credit, 3.
Mr. HALLIDAY.

Prerequisites, French 1, 2 and 3.

26. **II. INTERMEDIATE FRENCH.** — For sophomores; juniors and seniors may elect. As stated under Course 25.
3 class hours.

Credit, 3.
Mr. HALLIDAY.

Prerequisite, French 25.

27. **III. INTERMEDIATE FRENCH.** — For sophomores; juniors and seniors may elect. As stated under Course 25.
3 class hours.

Credit, 3.
Mr. HALLIDAY.

Prerequisite, French 26.

28. **I. ADVANCED FRENCH.** — For sophomores; juniors and seniors may elect. A reading course. Balzac's "Eugénie Brandet" and "Le Père Goriot," and other masterpieces of the nineteenth century; Brunetière's "Honoré de Balzac" and Harper's "Masters of French Literature," readings in the library and written reports.

3 class hours.

Credit, 3.
Professor ASHLEY.

Prerequisites, French 4, 5 and 6.

29. **II. ADVANCED FRENCH.** — For sophomores; juniors and seniors may elect. As stated under Course 28.
3 class hours.

Credit, 3.
Professor ASHLEY.

Prerequisites, French 4, 5 and 6.

30. **III. ADVANCED FRENCH.** — For sophomores; juniors and seniors may elect. General view of the history of French literature; Kastner and Atkins' "History of French Literature." Representative works of the important periods. Outside reading.

3 class hours.

Credit, 3.
Professor ASHLEY.

Prerequisites, French 25 and 26, or French 28 and 29.

50. **I. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. Meets the requirements of individual students and equips them with exact English equivalents for the French scientific terms in their particular science. Word lists of scientific terms are required, and also weekly readings and reports from scientific works in the subject in which they are majoring. Several scientific works are read.

3 class hours.

Credit, 3.
Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

51. **II. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. As stated under Course 50.
3 class hours.

Credit, 3.
Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

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52. **III. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

75. **I. FRENCH LITERATURE.** — For seniors; juniors may elect. The object of Courses 75, 76 and 77 is to give an introduction to recent movements in French literature. Course 75 deals with the drama, and plays by Augier, A. Dumas *filis*, Delavigne and other contemporary dramatists.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

76. **II. FRENCH LITERATURE.** — For seniors; juniors may elect. The novel. Works by Flaubert, the De Goncourts and Zola are read. Written reports are required on outside reading.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

77. **III. FRENCH LITERATURE.** — For seniors; juniors may elect. Modern criticism. Sainte-Beuve, "Causeries du Lundi" (Harper), and works by Taine and Renan. Reference book, Lanson's "Histoire de la Littérature Française."

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

SPANISH.

Elective Courses.

50. **I. ELEMENTARY SPANISH.** — For juniors; seniors may elect. Open to other students upon arrangement. Grammar, with special drill in pronunciation; exercises in conversation and composition. Reading from a reader and selected short stories.

3 class hours.

Credit, 3.

Professor ASHLEY.

51. **II. ELEMENTARY SPANISH.** — For juniors; seniors may elect. As stated in Course 50.

3 class hours.

Credit, 3.

Professor ASHLEY.

Prerequisite, Spanish 50.

52. **III. ELEMENTARY SPANISH.** — For juniors; seniors may elect. As stated in Course 50.

3 class hours.

Credit, 3.

Professor ASHLEY.

Prerequisite, Spanish 51.

75. **I. MODERN SPANISH AUTHORS.** — For seniors. Reading from modern Spanish novel and drama. Translation of English into Spanish. Private reading.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 52.

76. **II. MODERN SPANISH AUTHORS.** — For seniors. As stated in Course 75.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 75.

77. **III.** MODERN SPANISH AUTHORS. — For seniors. As stated in Course 75.
2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 76.

MUSIC.

Elective Courses.

50. **I.** HISTORY AND INTERPRETATION OF MUSIC. — For juniors; seniors may elect. History of music among the ancients; mediæval and secular music; epoch of vocal counterpoint; development of monophony opera and oratorio; life and works of the greatest representatives of the classical school, — Bach, Händel, Haydn, Gluck and Mozart.

1 class hour.

Credit, 1.

Professor ASHLEY.

51. **II.** HISTORY AND INTERPRETATION OF MUSIC. — For juniors; seniors may elect. A continuation of Course 50. The Romantic school; Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz and Liszt; Wagner and the opera.

1 class hour.

Credit, 1.

Professor ASHLEY.

52. **III.** HISTORY AND INTERPRETATION OF MUSIC. — For juniors; seniors may elect. The Modern school and Modern composers.

1 class hour.

Credit, 1.

Professor ASHLEY.

German.

Professor JULIAN, Mr. KELLER.

GERMAN.

The courses in German are intended to give the student a reading knowledge of the language and to introduce to him some of the masterpieces of German literature. To the student interested in pursuing advanced reading in scientific German, opportunity is given to do corollary reading in his major subject, in collaboration with the head of that department.

Required Courses.

1. **I.** 2. **II.** 3. **III.** ELEMENTARY GERMAN. — For freshmen; sophomores, juniors and seniors may elect. Grammar, composition and reading. Especial attention is given to oral work in German and to translation of English into German. Required of those presenting French for entrance who do not continue that language and have not studied German.

3 class hours.

Credit, 3.

Professor JULIAN and Mr. KELLER.

4. **I.** 5. **II.** 6. **III.** INTERMEDIATE GERMAN. — For freshmen; sophomores, juniors and seniors may elect. Selected works of Schiller, Heine and Goethe. Grammar review and advanced prose composition.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisite, required of freshmen who present two years of German for entrance and do not take French.

Elective Courses.

25. **I.** INTERMEDIATE GERMAN. — For sophomores; juniors and seniors may elect. Reading of such works as Sudermann's "Frau Sorge," "Wilhelm Tell," "Die Journalisten," etc. Grammar review.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisites, German 1, 2 and 3.

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26. **II. INTERMEDIATE GERMAN.** — For sophomores; juniors and seniors may elect. As stated under Course 25.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisite, German 25.

27. **III. INTERMEDIATE GERMAN.** — For sophomores; juniors and seniors may elect. As stated under Course 25.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisite, German 26.

28. **I. ADVANCED GERMAN.** — For sophomores; juniors and seniors may elect. Reading and studying of Goethe's most important literary productions.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisites, German 4, 5 and 6.

29. **II. ADVANCED GERMAN.** — For sophomores; juniors and seniors may elect. Development of the German novel; rapid reading of great novelists.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisite, German 28.

30. **III. ADVANCED GERMAN.** — For sophomores; juniors and seniors may elect. As stated under Course 29.

3 class hours.

Credit, 3.

Mr. KELLER.

Prerequisite, German 29.

50. **I. SCIENTIFIC GERMAN.** — For juniors; seniors may elect. Reading in German of modern magazine articles and works of a scientific nature. Different work assigned according to needs of individual students.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisites, German 4, 5 and 6, or German 25, 26 and 27.

51. **II. SCIENTIFIC GERMAN.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 50.

52. **III. SCIENTIFIC GERMAN.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 51.

75. **I. GERMAN LITERATURE.** — For seniors. Advanced language and literary study. Conducted entirely in German. Lectures on German literature and history; life, customs and travel in Germany. Collateral readings, including masterpieces of different epochs, such as "Niebelungenlied," Goethe's "Faust" and one modern typical drama.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisites, German 28, 29 and 30.

76. **II. GERMAN LITERATURE.** — For seniors. As stated under Course 75.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 75.

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 77. **III. GERMAN LITERATURE.** — For seniors. As stated under Course 75.
 3 class hours. Credit, 3.
Professor JULIAN.
 Prerequisite, German 76.

78. **I. CONVERSATION AND COMPOSITION.** — For seniors; juniors may elect.
 Translating connected English into German. Reproducing outside readings in
 German orally in class.
 1 class hour. Credit, 1.
Professor JULIAN.
 Prerequisites, German 4, 5 and 6, or German 25, 26 and 27.

79. **II. CONVERSATION AND COMPOSITION.** — For seniors; juniors may elect.
 As stated under Course 78.
 1 class hour. Credit, 1.
Professor JULIAN.
 Prerequisite, German 78.

80. **III. CONVERSATION AND COMPOSITION.** — For seniors; juniors may elect.
 As stated under Course 78.
 1 class hour. Credit, 1.
Professor JULIAN.
 Prerequisite, German 79.

DIVISION OF RURAL SOCIAL SCIENCE.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Agricultural Economics.

Professor CANCE, Assistant Professor SAWTELLE, Miss FOLEY, Mr. SMART.¹

Instruction in agricultural economics is designed to show that the agricultural industry justified its existence chiefly as a supplier of food and raw textile materials for human consumption; that agricultural success is measured by production of values rather than by production of volume of agricultural products; that the goal of the farmer is the largest net profit over a long-time period; that agricultural production includes all processes from purchase of seed and fertilizer and preparation of seedbed until the product reaches the consumer, including collection, transportation, storage, financing, packing, handling and selling; that a knowledge of the business of agriculture and agricultural commerce is to-day more necessary than a knowledge of agricultural technique.

The work of this department is conducted by means of lectures, readings and research in both library and field. A catalogue, now containing some 12,000 cards, covering the various phases of agricultural economics, is maintained. The department is also supplied with a large collection of maps, charts and statistical reports on the prices and supply of agricultural products. A goodly number of regular reports of the Bureau of Markets and other divisions of the United States Department of Agriculture are available for the use of students. Two series of bound volumes of bulletins are kept in the department offices, with duplicate series in the college library; one series already contains 12 volumes on "Co-operation in Agriculture," and the other, 15 volumes on "Marketing of Farm Products."

Required Courses.

26. **II. AGRICULTURAL INDUSTRY AND RESOURCES.** — For sophomores. A descriptive course dealing with agriculture as an industry and its relation to physiography, movement of population, supply of labor, commercial development, transportation, public authority and consumers' demand. The principal agricultural resources of the United States are studied with reference to commer-

¹ Temporary.

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cial importance, geographical distribution, present condition and means of increasing the value of the product and cheapening cost of production. Lectures, assigned readings, class topics and discussions.

4 class hours.

1 2-hour laboratory period, credit, 5.

Mr. —

Elective Courses.

50. **I. ELEMENTS OF AGRICULTURAL ECONOMICS.** — For juniors; seniors may elect. This course is designed to accompany or follow the course in elements of economics. It deals with the economic principles underlying the welfare and prosperity of the farmer and those institutions upon which his economic success depends; the economic elements in the production and distribution of agricultural wealth; means of exchange; principles of rural credit; problems of land tenure and land values; taxation of farm property; and the maintenance of the economics status of the farmer. Lectures, text, readings, topics and field work.

5 class hours.

Credit, 5.

Professor CANCE.

51. **III. THE EVOLUTION OF AGRICULTURE.** — For juniors; seniors may elect. A general survey of the evolution of the agricultural industry. Significant developments are traced and their causes and consequences studied. An attempt is made to give the student a knowledge of the changes which have taken place and which are taking place in the agricultural industry, the conditions which accompany these changes, and to furnish a basis by which the significance and the course of present and future developments in agriculture may be judged. Special emphasis will be placed on the development of agriculture in New England and the United States. Lectures, readings and library work.

5 class hours.

Credit, 5.

Assistant Professor SAWTELLE.

52. **II. CO-OPERATION IN AGRICULTURE.** — For juniors; seniors may elect. The history, principles and business relations of agricultural co-operation. (1) A survey of the development, methods and economic results of farmers' organizations and great co-operative movements; (2) the business organization of agriculture abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful co-operative endeavor among farmers, practical working plans for co-operative associations, with particular reference to purchase of supplies and the marketing of perishable products. Lectures, text, assigned readings and practical exercises.

5 class hours.

Credit, 5.

Professor CANCE.

53. **III. THE AGRICULTURAL MARKET.** — For juniors; seniors and graduate students may elect. A study of the forces and conditions which determine the prices of farm products and the mechanism, methods and problems concerned with transporting, storing and distributing them. Supply and demand, course of prices, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market and direct sales are taken up. The characteristics and possibilities of the New England market are given special attention. Lectures, readings, assigned studies and field work.

5 class hours.

Credit, 5.

Professor CANCE.

75. **II. RURAL AND BUSINESS LAW.** — For seniors; juniors may elect. Land, titles, public roads, rights incident to ownership of livestock, contracts, commercial paper and distinctions between personal and real property. Text, written exercises, lectures and class discussions.

5 class hours.

Credit, 5.

Mr. SMART.

76. **II. TRANSPORTATION OF AGRICULTURAL PRODUCTS.** — For seniors and graduate students; juniors may elect. The development of highway, waterway and railway transportation and its relation to the agricultural development of the country; the principles governing the operation and control of transportation agencies; present-day problems relating to the shipment of farm products, rates, facilities and services; methods of reducing wastes in transportation; the economics of the good roads movement and of motor transportation. Lectures, text and field work.
5 class hours.

Credit, 5.
Professor CANCE.

77. **I. PROBLEMS IN AGRICULTURAL ECONOMICS.** — For seniors and graduate students; juniors may elect. An advanced course for those desirous of studying more intensively some of the economic problems affecting the farmer, such as: land problems, — land tenure, size of farms, causes affecting land values, private property in land, taxation of farm property; special problems, — cost of producing farm products, farm labor in New England, immigration, agricultural credit. Opportunity is given, if practicable, for field work, and students are encouraged to pursue lines of individual interest.
5 class hours.

Credit, 5.
Professor CANCE.

78. **III. AGRICULTURAL CREDIT FACILITIES.** — For seniors and juniors. Lectures, discussions and assigned readings on credit needs of farmers; the legitimate use of credit in the acquisition of land, and the production, storage and marketing of agricultural products; the development of national and State rural credit institutions and laws; the powers and methods of operation of credit institutions with reference to the supply of credit for agricultural purposes; the methods by which the individual may increase his credit standing and borrowing power; ways in which the present credit facilities may be increased.
3 class hours.

Credit, 3.
Assistant Professor SAWTELLE.

79. **I. AGRICULTURAL STATISTICS.** — For seniors; juniors and graduate students may elect. The nature and sources of agricultural statistics, the methods of obtaining numerical facts, of analyzing and drawing conclusions from statistical data, and the methods of presenting in a true and forceful manner the statistical facts of the agricultural industry. Opportunity is given in the laboratory for practice in the use of statistical methods and processes, and to acquire experience in dealing with practical statistical problems. The application of statistics and statistical methods in the fields of agricultural economics, extension work, education, journalism and the business matters connected with farm operation is emphasized.
2 class hours.

3 2-hour laboratory periods, credit, 5.
Assistant Professor SAWTELLE.

80. **I. SEMINAR.** — For seniors and graduate students. Research in agricultural economics and history; problems of New England agriculture. Library work and reports. If desirable some other topic may be substituted.

1 or 2 2-hour conference periods, credit, 1 or 2.
The DEPARTMENT.

81. **II. SEMINAR.** — For seniors and graduate students. As stated in Course 80.

1 or 2 2-hour conference periods, credit, 1 or 2.
The DEPARTMENT.

82. **III. SEMINAR.** — For seniors and graduate students. As stated in Course 80.

1 or 2 2-hour conference periods, credit, 1 or 2.
The DEPARTMENT.

83. **I. SALESMANSHIP OF AGRICULTURAL PRODUCTS.** — For seniors; juniors may elect. The course embraces a study of the principles and practices that are involved in the selling of goods and services. The application of these principles of salesmanship to the disposal of agricultural products is especially emphasized. Types of sales, motives for buying, securing interviews, types of prospects, preparation of sales talks, meeting objections and excuses, and sales demonstrations by students and the instructor are included.

2 class hours.

Credit, 2.
Mr. —

84. **III. ADVERTISING AGRICULTURAL PRODUCTS.** — For seniors; juniors may elect. A course dealing with the application of the principles of advertising to agricultural products. A study of the nature of advertising, the economics of advertising, the use of media, copy, psychology as applied to advertising, layout, the advertising campaign, advertising agency, etc., is made. The solution of practical problems to emphasize different phases of advertising is required by students.

2 class hours.

Credit, 2.
Mr. —

85. **II. AGRICULTURAL PRICES.** — For seniors and graduate students. A study of the prices of agricultural products and other commodities which are of importance in the agricultural industry. Limited to five students.

2 or 3 2-hour laboratory periods, credit, 2 or 3.
Assistant Professor SAWTELLE.

86. **III. AGRICULTURAL PRICES.** — For seniors and graduate students as stated in Course 85. Limited to five students.

2 or 3 2-hour laboratory periods, credit, 2 or 3.
Assistant Professor SAWTELLE.

87. **III. FOREIGN TRADE IN AGRICULTURAL PRODUCTS.** — For seniors and graduates; juniors may elect. A general course embracing a study of the principles and practices of international trade and the foreign commerce of the United States, particularly with reference to agricultural products. The development and present status of foreign trade in agricultural products, trade relations with foreign nations, the agencies and practices of foreign trade, foreign trade salesmanship and advertising, the status of New England with reference to foreign trade are some of the topics which will be presented. The work in the course will also include a personal study of special features of foreign trade and of the trade importance of specific subjects. Textbook, class discussions and class topics.

3 class hours.

Credit, 3.
Mr. —

88. **III. BUSINESS ACCOUNTING.** — For seniors; juniors may elect. This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis and interpretation of accounting data, and of the methods used in accounting and preparing the usual types of business statements. The managerial uses of accounting as a means of business control is the keynote of the course.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Admission by permission of the instructor only.

Mr. —

Agricultural Education.

Professor WELLES, Professor GLICK, Mr. HEALD.¹

The primary aim of the department is to train students for service in some form of educational work. Students desiring state approval as teachers of agriculture or related subjects should confer with the head of the department as early as possible.

¹ State Agent for Agricultural Teacher-Training representing the State Department of Education in the administration of vocational education acts.

sible to insure a desirable range of preparation. They should also become acquainted with the State Agent for Agricultural Teacher-Training who approves candidates for positions in agricultural departments and special schools.

The department seeks to be of the greatest possible service to students who are prepared to teach and whose scholastic standing and qualifications generally seem to make them suitable candidates for positions. Students who major in other departments but expect to teach should consult this department regarding the educational courses best suited to their purposes.

The department recommends to the State Department of Education such graduates of the college as are entitled to receive the high school teachers' term certificate.

The department is thoroughly equipped for its work with classrooms, reference material, etc.

29. **II. PROBLEMS IN EDUCATION.** — For sophomores in the Division of Rural Social Science. The aim of this course is to awaken young students to the fact that what they enjoy in educational opportunities has not always existed. Our American educational policy and program is the present form of the solution of many vital problems of education. These are continually facing the newer generations as industry and living conditions change. Thinking men and women tomorrow must give attention to so vital a concern in life as education and should begin early. The work covers text, references, discussions and lectures.

3 class hours.

Credit, 3.

Professor WELLES.

51. **I and II. PRINCIPLES AND METHODS OF TEACHING.** — For juniors; seniors may elect. This course is intended for students who expect to teach. Others must consult the head of the department before registering. The study covers the general principles and methods of teaching and their application to particular cases. This is an adaptation of the case plan of study. Discussions of the classroom are very important. Outside reading is required on assigned and optional matter. Observation visits to schools in session are required with full reports. Each student must prepare a lesson for teaching and teach a moot class subject to the critical analysis of the class and the instructor. A good text is the basis of the course.

5 class hours.

Credit, 5.

Professor WELLES.

52. **I. HISTORY AND PHILOSOPHY OF EDUCATION.** — For seniors and graduate students; juniors may elect. A general course in the history of educational theory and practice. Special emphasis is placed upon the philosophical background of education.

5 class hours.

Credit, 5.

Professor GLICK.

55. **I and II. GENERAL PSYCHOLOGY.** — For juniors; seniors and graduate students may elect. This is a basic course for those anticipating further study in psychology as well as a practical and cultural course for those who can take only one course in this field. It deals with the fundamental principles of psychology; the evolution of mind in animals and man; various types and products of social organizations; abnormal psychology including hypnotism, dreams, mental disorders, etc.

5 class hours.

Credit, 5.

Professor GLICK.

56. **II and III. EDUCATIONAL PSYCHOLOGY.** — For juniors; seniors and graduate students may elect. It is a direct application of psychology to the field of education and is a basic course for both general and specific methods. The course deals with the original nature of the child, the psychology of learning, individual

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differences, transfer of training, mental tests, etc. Intended primarily for prospective teachers, but open to others who are sufficiently interested.

5 class hours.

Credit, 5.

Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

75. II. PRINCIPLES OF SECONDARY EDUCATION. — For seniors; juniors may elect. This is a study of the American high school, both junior and senior. It is designed to acquaint the student with the aims and objectives of the high school and the factors upon which the realization of these aims depend. Some of the specific topics included in the study are financial support, course of study, qualifications of teachers and recent tendencies and policies in secondary education.

3 class hours.

Credit, 3.

Professor WELLES.

76. I and III. SPECIAL METHODS IN TEACHING AGRICULTURE AND RELATED SCIENCE. — For seniors; juniors and others qualified may elect. Owing to the specialized nature of this course, the head of the department must be consulted before registration. The course aims to set out clearly the main details in teaching agriculture and related science from a vocational point of view. The home project is considered the basis. The work covers material and method, laws, policies, state requirements, common practices, teachers' subject and method outlines, project outlines, lesson plans, moot class teaching, observation, references, weekly oral and written reports, etc. The principle of job analysis is employed throughout the course.

5 class hours.

Credit, 5.

Professor WELLES.

77. III. METHODS IN EXTENSION TEACHING. — For seniors; juniors and others qualified may elect. The nature of this course requires that only those who are definitely interested be admitted. Candidates must consult the head of the department before registering. The course consists of a survey of the field of extension work and the methods by which this work is accomplished. The specific lines dealt with are those of the county agent, boys' and girls' club leader, county demonstration agent and agricultural specialist. The administration of county, state and federal extension service is included in the discussions. Some time will be required of each student in field observation of extension work. The course will be conducted jointly by members of the Extension Service staff and the department of Agricultural Education.

3 class hours.

Credit, 3.

Professor WELLES and EXTENSION SERVICE STAFF.

79. III. TESTS AND MEASUREMENTS. — Limited to fifteen seniors majoring in the department. A study of the development, theory and construction of the various types of tests and measurements with special emphasis upon their use in the schools. Practice is given in the administration and scoring of tests. Modern statistical methods are applied to the interpretation of the results.

2 class hours.

2 laboratory hours, credit, 3.

Professor GLICK.

Prerequisites, Agricultural Education 55 and 56 or consent of instructor.

80. I, II and III. SUPERVISED TEACHING. — (Includes apprentice, practice and observation teaching.) Primarily for seniors; juniors and others qualified may be admitted by arrangement. Under certain conditions a student may absent himself from college during one term of his junior or senior year for supervised teaching. Such a procedure is particularly desired for those who are preparing to teach agriculture and is in accordance with the state plan which specifies the apprentice method of training. For detailed information, consult the head of the department.

Opportunities for practice teaching are sought on the campus and in nearby high schools for those who cannot absent themselves for a term of apprentice teaching. A limited amount of observation practice is permissible. Besides teaching, a student is required to pursue a course of professional reading bearing upon the subject he is teaching or observing. In all cases he is required to make detailed teaching plans covering the subject-matter of the lessons and to outline the supporting projects. The amount of credit depends upon the number, character and length of teaching exercises and conferences. Scheduled by arrangement.

Credit, 1 to 5.

The DEPARTMENT.

81. **III. SEMINAR IN METHODS OF TEACHING.** — Open to seniors majoring in Agricultural Education; graduate students and others by arrangement. This is an opportunity for those definitely intending to teach to make further studies in special lines other than agriculture, which is provided for in Agricultural Education 76. These include methods in college teaching, special methods in science, etc.

1 2-hour conference period, credit, 2.

Professor WELLES.

Prerequisites, Agricultural Education 51 and 56 or equivalents.

83. **III. SEMINAR IN APPLIED PSYCHOLOGY.** — For seniors and graduate students. Intended for those who desire to study the application of psychology in special fields such as salesmanship, advertising, medicine, law, public office, extension work, education, business, etc.

1 2-hour conference period, credit, 2.

Professor GLICK.

Prerequisites, Agricultural Education 55 and 56 or 85.

85. **I. VOCATIONAL PSYCHOLOGY.** — For seniors and graduate students. A study of psychology as applied to vocational work other than education. Emphasis is placed upon the theory and use of vocational tests, selection of men, individual aptitudes, etc.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

95. **II. MODERN PHILOSOPHY OF EDUCATION.** — For seniors and graduate students; juniors may elect. A general survey of modern philosophical theories and tendencies with special emphasis upon their influence in determining present educational objectives and procedures. An analysis of the theories underlying various national cultures and ideals and the significance of education in their realization. Emphasis is placed upon the significance of curriculums in realizing definite educational objectives.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Agricultural Education 52 or consent of instructor.

Rural Sociology.

Professor —, Professor SIMS.¹

The courses in rural sociology are designed for two purposes: first, to give students an appreciation of the general problems of country life; second, to afford a definite training for students who wish to take up some specific form of social service. In the last ten years rural sociology has been introduced as a subject into more than 50 per cent of the agricultural schools and colleges. There is a good demand for teachers, and an increasing opportunity in other directions in this subject. The courses afford the student an opportunity to pursue graduate as well as undergraduate work. The library of the college is unusually well equipped with rural sociological material.

¹ Absent on leave.

Required Course.

27. **III. ELEMENTS OF RURAL SOCIOLOGY.** — For sophomores. A broad survey of the field of rural sociology, including such topics as the origin of rural sociology, its methods and problems; relation of sociological to the scientific and technical aspects of agricultural problems; the development of the rural community in New England and the west, religious, educational and social ideals of rural people; characteristics and influence of the rural environment, the movement of the rural population, the effects of immigration; rural institutions, the school, the church, local government, effects of modern conditions of life on rural institutions; rural organization; problems of progress, an analysis of the needs of rural life in its further development. Lectures, readings and essays on assigned topics.
3 class hours.

Credit, 3.

Professor SIMS.

Elective Courses.

50. **I. RURAL VILLAGE AND TOWN SOCIOLOGY.** — For juniors; seniors may elect. Village history and evolution; present status and importance of the small town; its relation to farm and city; institutional, economic, social, cultural and moral aspects; the problems of citizenship, organization and leadership presented by the small town; schemes for improvement criticized and evaluated. This course has special value for New Englanders who wish to understand their semi-urban and town communities. Lectures, discussions and topical reports.
3 class hours.

Credit, 3.

Professor SIMS.

51. **II. RURAL GOVERNMENT.** — For juniors; seniors may elect. A general survey of the development of rural government in the United States, origin of the New England town, its influence upon the west, county government, the influence of the farmer in legislation, good roads movement, credit facilities, taxation, boards of agriculture, agricultural colleges and experiment stations in relation to rural welfare; national government; a general survey of political organizations and movements among farmers in the United States and foreign countries and their influence in shaping legislation; relation of the Department of Agriculture, postal system, the various national commissions and agencies to rural welfare. Lectures, readings, written exercises on assigned topics.
3 class hours.

Credit, 3.

Professor SIMS.

52. **III. RURAL ORGANIZATION.** — For juniors; seniors may elect. A study of the organized agencies by which rural communities carry on their various forms of associated life, particularly a study of the ways by which the domestic, economic, cultural, religious and political institutions contribute to rural betterment; principles underlying leadership, qualifications of the paid leader and the lay leader; the field of rural social service, national, State and local, preparation and opportunity for service; rural community building, a study of organized ways and means by which aid is given local communities. The method, scope and history of local, State and national associations formed about some farm product, their influence in forming class consciousness and in shaping agrarian legislation; need of federation. Lectures, readings and essays on assigned topics.
3 class hours.

Credit, 3.

Professor SIMS.

76. **I. FIELD WORK IN RURAL SOCIOLOGY.** — For seniors; juniors may elect. Designed to meet the needs of students who wish to do some constructive work in rural social service while still in college. The work is carried on in co-operation with the various college agencies engaged in rural service. Any project for which credit in this course is to be asked must first have the approval of the head of the department.

2 to 6 laboratory hours, credits, 1 to 3.

Professor SIMS.

Prerequisites, Rural Sociology 27 and preferably 50 or 52.

77. **II. RURAL SOCIAL RESEARCH AND SURVEYS.** — For seniors; juniors may elect. A careful study is made of the scientific method as applied to social problems, the technique of investigation and research; the procedure of gathering sociological data by means of the survey; the interpretation and graphic presentation of statistical facts. This course is indispensable for those contemplating any kind of social work. Text, lectures and laboratory work.
3 class hours.

Credit, 3.
Professor SIMS.

79. **I. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.
Professor SIMS.

80. **II. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.
Professor SIMS.

81. **III. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.
Professor SIMS.

Rural Home Life.

Professor SKINNER, Assistant Professor KNOWLTON, Miss BARTLEY.

The emphasis of the work in Home Economics is upon home making as a fundamental vocation. To this end, not only technical courses are offered, but also those which will tend to give the student a better understanding of the place which the home should take as a factor in community life, and a sympathetic attitude toward the problems of everyday life.

The work is largely prescribed in the first two years and gives the necessary basis for the development of courses in Home Economics during the junior and senior years. It is possible for graduates of this course, if they have skillfully chosen their electives in the field of agriculture or horticulture, to engage in home industries for profit and to engage in certain phases of professional work in the field of Home Economics.

The food laboratory located in Fernald Hall is fitted with individual cabinets and gas stoves. Provision is made for practice in the preparation and serving of meals with the family as a unit. The clothing laboratory located in the Abigail Adams House is provided with modern equipment. The related science is given in the laboratories of the various departments of the college.

1. **I. INTRODUCTION TO HOME ECONOMICS.** — For freshmen. Lectures on the history and evolution of the home; social customs and their value in family relationships; healthful and suitable care of the wardrobe; principles of nutrition as applied to the student's life; the student's budget, and the keeping of personal accounts.
2 class hours.

Credit, 2.
Miss SKINNER.

28. **I. 29. II. CLOTHING AND TEXTILES.** — For sophomores. A study of the selection and purchase of suitable materials, their character and cost; appropriateness and simplicity in dress. Practical laboratory work includes designing and drafting of patterns, the use of commercial patterns, and the making and repairing of garments.
1 class hour.

3 2-hour laboratory periods, credit, 4.
Miss BARTLEY.

32. **II. APPLIED DESIGN.** — For sophomores. The application of the principles of design to specific problems of everyday life, using various media for their execution. Offered for the year 1925-26.

3 2-hour laboratory periods, credit, 3.
Miss BARTLEY.

33. **III. FOODS.** — For sophomores. An introduction to the study of foods; selection, preparation and service.

3 class hours.

1 3-hour laboratory period, credit, 4.
Miss KNOWLTON.

50. **I. FOODS.** — For juniors. A study of foods in their scientific and economic aspects, with the preparation of simple breakfasts and luncheons.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Miss KNOWLTON.

51. **II. FOODS.** — For juniors. A further study of foods on the basis of meal planning in the home, with especial emphasis on dinners and the day's meals as a whole.

2 class hours.

2 3-hour laboratory periods, credit, 5.
Miss KNOWLTON.

52. **III. DIETETICS.** — For juniors. A study of the food requirement throughout infancy, childhood, adolescence, adult life and old age, considering the energy value of foods and the nutritive properties of foodstuffs. Typical dietaries are planned for each period, with special regard to economic and social conditions.

2 class hours.

2 3-hour laboratory periods, credit, 5.
Miss KNOWLTON.

56. **I. CLOTHING.** — For juniors. This course aims to develop initiative, independence and art in designing garments for figures of different types, with special emphasis on proportion, color and texture. Laboratory work will be concerned with more difficult problems of garment construction.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Miss BARTLEY.

61. **III. HOUSE FURNISHING.** — For juniors. A study of the fundamental principles of furnishing a moderate-sized home from an æsthetic and an economic standpoint. Offered for the year 1925-26.

2 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

76. **I. HOME MANAGEMENT.** — For seniors. The application of the principles of scientific management to the household, and the elements of successful home making. The family income, cost of living, household accounts, the budget and its apportionment. The responsibility of the woman to her family and the community in establishing right standards of living.

4 class hours.

Credit, 4.
Miss SKINNER.

78. **II. HOME NURSING.** — For seniors. A study of the care of the family health; simple diseases and their prevention; the care of young children and invalids; first aid to the injured.

3 class hours.

Credit, 3.
Miss SKINNER.

81. **I. THE COMMUNITY OF THE HOME ECONOMICS GRADUATE.** — For seniors. This course is intended to be a practical application of Home Economics to the various social, economic, industrial and educational problems relating to the home which the Home Economics graduate may meet in any community, either as an

employed worker or as a volunteer. This may include a field trip to Boston and other centers at an estimated cost of ten dollars. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss KNOWLTON.

82. **II. HEALTH EDUCATION.** — For seniors. This course is intended to show how the Home Economics graduate fits into the health program of the school, either as a teacher or as volunteer worker. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss KNOWLTON.

83. **III. FIELD PROBLEMS UNDER SUPERVISION.** — For seniors. This course is intended to be a more intensive application of Home Economics to special community problems and to serve as a beginning of simple research work. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss KNOWLTON.

84. **III. MILLINERY.** — For seniors. This course considers different types of hats, their appropriateness and becomingness, with practical work in designing frames, remodeling commercial frames, covering, trimming and renovating hats.

3 2-hour laboratory periods, credit, 3.

Miss BARTLEY.

GENERAL DEPARTMENTS.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Military Science and Tactics.

Major N. BUTLER BRISCOE, Cav. (D. O. L.), U. S. A.; Captain DWIGHT HUGHES, Jr., Cav. (D. O. L.), U. S. A.; Captain DANIEL J. KEANE, Cav. (D. O. L.), U. S. A.; Technical Sergeant JOHN J. LEE, U. S. A., Retired; Technical Sergeant JAMES A. WARREN, Cav. (D. E. M. L.), U. S. A.; and a detachment of enlisted men of the United States Army.

Under act of Congress (July 2, 1862) military instruction under a regular army officer was required in this college of all able-bodied male students. Under act of Congress June 3, 1916, as amended by act of Congress Sept. 8, 1916, there was established at this college in April, 1917, an infantry unit of the Reserve Officers' Training Corps. Following the World War and an act of Congress (July 9, 1918) the Reserve Officers' Training Corps is in operation under the regulation of the War Department, administered by the president of the college and the professor of military science and tactics.

Beginning with the fall term, 1920-21, the infantry unit of the Reserve Officers' Training Corps was converted into a cavalry unit.

The primary object of the Reserve Officers' Training Corps is to provide systematic military training at civil educational institutions, for the ultimate purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time the students are pursuing their general or professional studies, with the least practicable interference with their civil careers, by employing methods designed to fit men physically, mentally and morally for pursuits of peace as well as war.

All male candidates for a degree in a four-year course must take for two years at least three hours a week of military training.

Students in their junior and senior years, who are approved by the president and the professor of military science and tactics, may take the advanced course if they so elect. The advanced course consists of at least five hours per week and a summer camp of about six weeks during the summer vacation, between the junior and senior years. Students taking this course are paid by the Federal

government at a rate to be fixed by the Secretary of War, not to exceed the value of the army ration. The rate now fixed is 30 cents per day, which amounts to about \$103 per year. Students graduating in the advanced course are eligible for commissions in the Officers' Reserve Corps, *but are not required to accept such commissions if offered.*

The uniform furnished to Freshmen and Sophomore (Basic Class) is of Olive Drab Woolen cloth, and is supplied by the Federal Government without cost. The uniforms for the Junior and Senior (Advanced Class) are of Forest Green Woolen cloth fitted and especially made for the individual student. It is expected that eventually this uniform will be furnished for the Basic Class also. This uniform is also furnished without cost to the student.

The course for cavalry units of the Reserve Officers' Training Corps includes theoretical and practical instruction in all phases of cavalry work, so distributed over the four-year college course as to qualify students at the end of the freshman year as privates of cavalry; at the end of the sophomore year as non-commissioned officers of cavalry; and upon graduation as reserve officers. The instruction in this department covers cavalry drill, cavalry weapons, — *i.e.*, rifle, pistol, saber, automatic rifle and machine gun, — map reading and military sketching, minor tactics, equitation, etc. The course in equitation includes cross-country riding and instruction in polo. So far as season and weather permit, instruction is of a practical nature out of doors.

Required Courses.

1. **I.** — For freshmen. Theoretical and practical instruction in military science and tactics, and lectures on military subjects.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

2. **II.** — For freshmen. Theoretical and practical instruction in military science and tactics, and lectures on military subjects.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

3. **III.** — For freshmen. Theoretical and practical instruction in military science and tactics, and lectures on military subjects.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

25. **I.** — For sophomores. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

26. **II.** — For sophomores. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

27. **III.** — For sophomores. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

3 scheduled hours, credit, 2.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

Elective Courses.

50. **I.** — For juniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

51. **II.** — For juniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

52. **III.** — For juniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

75. **I.** — For seniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

76. **II.** — For seniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

77. **III.** — For seniors. Theoretical and practical instruction in military science and tactics, and lectures on military subjects. Equitation.

5 scheduled hours, credit, 4.

THE PROFESSOR OF MILITARY SCIENCE
AND TACTICS, and ASSISTANTS.

Physical Education and Hygiene.

Professor HICKS, Assistant Professor GORE, Mrs. HICKS, Mr. BALL, Mr. DERBY, Mr. TUMEY.

The purpose of the courses offered by this department is to provide active exercise and to instruct every student how to care for his health and maintain his physical condition while carrying on his college course.

The equipment consists of the Alumni Athletic Field, which has room for two football fields, a quarter-mile cinder track with a 220 straightaway, and the baseball diamond; and also the old field for class football and baseball, two tennis courts, and the drill hall floor for basket ball. For several years the drill hall floor was used for class work in gymnastics, but its condition has become so bad that this has been discontinued. During the winter months a hockey rink is provided on the college pond.

[All undergraduate male students are given a physical examination upon entering.]

MEN.*Required Courses.*

1. **I. HYGIENE.** — For freshmen. Lectures on personal hygiene.
1 class hour.

Credit, 1.

Professor HICKS.

2. **I. RECREATION.** — For freshmen. Outdoor games.

2 laboratory hours, credit, 1.

The DEPARTMENT.

3. **III.** RECREATION. — For freshmen. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
7. **I.** 8. **II.** 9. **III.** RECREATION. — Military substitute for freshman men.
3 scheduled hours, credit, 2.
The DEPARTMENT.
25. **I.** RECREATION. — For sophomores. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
26. **III.** RECREATION. — For sophomores. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
30. **I.** 31. **II.** 32. **III.** RECREATION. — Military substitute for sophomore men.
3 scheduled hours, credit, 2.
The DEPARTMENT.

Elective Course.

77. **III.** TRAINING COURSE. — For seniors. Election by permission only.
History of physical education and supervision of athletics.
2 class hours.
Credit, 2.
Professor HICKS.

WOMEN.

Required Courses.

4. **I.** RECREATION. — For freshmen. Outdoor games.
3 scheduled hours, credit, 2.
Mrs. HICKS.
5. **II.** GYMNASTICS. — For freshmen. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
6. **III.** RECREATION. — For freshmen. Outdoor games.
3 scheduled hours, credit, 2.
Mrs. HICKS.
27. **I.** RECREATION. — For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.
28. **II.** GYMNASTICS. — For sophomores. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
29. **III.** RECREATION. — For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.

Elective Courses.

50. **II.** GYMNASTICS. — For juniors. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
76. **II.** GYMNASTICS. — For seniors. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.

THE LIBRARY.

The general college library consists of all books belonging to the college, including the library of the Experiment Station and all divisional and departmental collections of books. The main collection now occupies the entire building, which was originally intended to serve the purposes of both chapel and library. A dictionary card catalogue is intended ultimately to cover all material in the general college library, which now comprises approximately 70,000 volumes, besides much unbound or paper-bound material, pamphlets, periodicals and newspapers. The library contains also some important special collections of books, amounting to several thousand volumes, not yet catalogued. Much of the constantly increasing pamphlet and periodical material, even though it is not yet comprehended in the general catalogue, is made promptly available by means of check lists, indexes, bibliographies and other library helps. Files of important periodicals make readily accessible to readers the latest contributions to the sum of human knowledge by contemporary leaders in many fields of thought and investigation. Works dealing with the sciences related to the processes and problems of agriculture are in greatest abundance, but literature, history and sociology are also well represented in our collections of books. The reading room is well supplied with encyclopedias and other general reference books, and with current numbers of an attractive list of popular and technical magazines and periodicals.

The greater part of the library material has been recently reclassified and recatalogued in accordance with a standard system, and is thereby rendered at all times directly accessible to teachers and students as well as library workers. From time to time informal lectures on the use of the library will be given to groups of students. By seminar and laboratory methods, individual students will be taught to appreciate books as essential sources of information and culture, and will be instructed in the use of the various devices common in libraries for finding what the library contains. All members of the college community have the privilege of free access to the book stacks for reference purposes, and books not specially reserved may be loaned for extra-library use for a period of two weeks.

The library is open from 8 A.M. to 9.30 P.M. on week days, and from 9 A.M. to 1.30 P.M. on Sundays while college is in session. Shorter hours prevail during vacation.

THE GRADUATE SCHOOL.

EDWARD M. LEWIS, A.M., Acting President of the College.

CHARLES E. MARSHALL, Ph.D., Director of the Graduate School and Professor of Microbiology.

GRADUATE STAFF, 1925-1926.

Acting President LEWIS, Director MARSHALL, Professors ALEXANDER, BEAUMONT, BRADLEY, CANCE, CHAMBERLAIN, CLARK, CRAMPTON, FERNALD, FOORD, GLICK, GRAHAM, LINDSEY, OSMUN, PETERS, SEARS, SEREX, SHAW, THAYER, TORREY, WAUGH, WELLES; Mr. WATTS, Secretary.

HISTORY AND AIMS.

This college has provided study of a graduate nature for many years. The need for such training became real when agriculture was recognized as an aggregate of the many sciences involved and the many practices employed. The obsolete notion that agriculture is only farming has been replaced by the notion that farming, as such, is only one element in agriculture. The ramifications and divisions of agriculture are many; most of these call for advanced study and training to meet the exigencies of the times. No apology is, therefore, required for an attempt to fathom the scientific, economic and social intricacies of such a fundamental phase of human effort as agriculture. The value of such an undertaking is, or should be, patent to every intelligent mind familiar with the situation.

Graduate work has been available to students since 1893. At that time it was possible to qualify for the degree of master of science; later, in 1898, for the degree of doctor of philosophy; in 1913, for the professional degrees of master of agriculture and doctor of agriculture; in 1916, for the specific professional degree of master of landscape architecture.

To make the graduate work more effective and distinctive in agriculture, the graduate school was established in 1908. It has become the operating agency for the purpose of fitting graduates of this and other institutions for teaching in colleges, high schools and other public schools; for positions as government, State and experiment station specialists in farm management, dairying, livestock husbandry, poultry science, agronomy, landscape gardening, pomology, vegetable gardening and floriculture; for positions as bacteriologists, botanists, chemists, entomologists; for economists and social workers; and for numerous other positions requiring a great amount of scientific and professional agricultural knowledge, training and experience.

ORGANIZATION.

The school is based upon the department as the unit, and the apprenticeship system as the most effective means of instruction. This gives to the student individuality in treatment and an intimacy with actual conditions of work and operations. The student is assigned to an advisory committee, composed of the instructor in charge of his major subject as chairman, and instructors in charge of his minor subjects as members, which directs his graduate studies. The chairmen of all these committees together constitute the graduate staff, which controls the policy of the graduate school.

ADMISSION.

Admission to the graduate school will be granted:—

1. To graduates of the Massachusetts Agricultural College.

2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this college.

In case an applicant presents his diploma from an institution of good standing, but has not, as an undergraduate, taken as much of the subject he selects for his major as is required of undergraduates at the Massachusetts Agricultural College, he will be required to make up such parts of the undergraduate work in that subject as the instructor in charge may consider necessary. He shall do this without credit toward his advanced degree.

Admission to the graduate school does not necessarily admit to candidacy for an advanced degree, — students holding a bachelor's degree being in some cases permitted to take graduate work without becoming candidates for higher degrees.

Applications for membership in the graduate school should be presented to the director of the school. Full statements of the applicant's previous training, of the graduate work desired, and of the amount and kind of work already done by him as an undergraduate should be submitted, together with a statement whether the applicant desires to work for a degree.

Registration is required of all students taking graduate courses, the first registration being permitted only after the student has received an authorization card from the director.

NATURE, METHODS AND REQUIREMENTS OF GRADUATE WORK.

Graduate work differs from undergraduate work in its purposes and methods. The primary aims of the instructor are emphasized in an attempt to have the student adjust himself and place himself in his environment; develop the rule of self-direction and self-instruction; acquire the power of accurate reasoning; gain proficiency and skill in his selected field of study or practice; and obtain an appreciative and discriminative insight into experimentation and original research. Methods are not devised, therefore, for attractiveness, entertainment and superficial reviews, but for the creation of initiative and profound thought, thorough acquaintance with detail, independent advance and industrious habits. Careful readings, lectures, conferences, surveys, laboratory exercises and field work are some of the agencies utilized.

All members of the graduate school are required to attend the course of lectures designed to supplement the technical work of all graduate studies. These lectures will be given once each week, and the students will be held responsible for the work.

Candidates for the degree of doctor of philosophy are required to prosecute three subjects, one of which shall be designated as the major and the others as minors. No two of these subjects may be taken in the same department. An original thesis shall be considered a part of the major subject.

Candidates for the degree of doctor of agriculture are required to select a major and such other subjects as will develop the major in its greatest intensity and comprehensiveness. Successful experience is also requisite, together with a thesis which represents a masterly survey or intimate study through accurate application of some phase of the major subject.

Candidates for the degree of master of science are required to prosecute two subjects, one of which shall be designated as a major and the other as a minor. When desirable, and approved by the Director, the minor may be made up of subjects from more than one department. The major and minor subjects may not be selected in the same department. An original thesis is considered a part of the major subject.

Candidates for the degree of master of agriculture are allowed greater privileges in the selection of subjects, but will be required to select a major and such other supporting lines of study as will be necessary to equip the individual professionally. A thesis which will reveal the professional training of the individual will be required.

Candidates for the degree of master of landscape architecture will be expected to conform to the established courses of the department, and to the requirements of the department in the preparation of a thesis, as well as in actual experience outside the college.

Candidates for membership in the graduate school who do not desire to work for a degree may, with the approval of the director of the school, take more than one subject in the same department, or pursue work in several departments, if their preparation will permit. A statement of the subjects chosen must in each case be submitted to the director of the graduate school for approval. The chosen subjects must bear an appropriate relation to each other.

A working knowledge of French and German is essential to successful graduate work, and students not having this will find it necessary to acquire it as soon as possible after entering. Other modern languages may be substituted if considered more valuable.

The graduate staff reserves the privilege of recommending and allowing courses in other institutions as a part of residence instruction. Such supervision will be exercised and credit granted as are essential to the highest standards of efficiency.

THESES.

A thesis is required of each candidate for an advanced degree. It must be on a topic belonging to the candidate's major subject; must show that its writer possesses the ability to carry on constructive study; must be an actual contribution to knowledge; and possess real merit.

The thesis in its final form must be submitted to the director by May 15 of the year in which the student is to present himself for the advanced degree, and before he may take the required examination. Three complete copies are required. One of the copies is to be retained as an official copy by the director, one is to be deposited in the college library, and the third is to be retained by the department in which the thesis was prepared. The candidate for the doctor's degree must be prepared to defend at the oral examination the views presented in his thesis.

FINAL EXAMINATIONS.

For the degree of doctor of philosophy or doctor of agriculture, final examinations on the minors taken are given upon the completion of the subjects. In the major subject, a written examination, if successfully passed, is followed by an oral examination in the presence of the graduate staff.

For the degree of master of science, master of agriculture or master of landscape architecture, a final examination upon the minor taken is given upon the completion of each course, and in the major a final examination, which may be either written or oral, or both, is given over all the work by the department concerned.

DEGREES CONFERRED.

The degrees of doctor of philosophy and doctor of agriculture are conferred upon graduate students who have met the following requirements:—

1. The devotion of at least three years¹ to the prosecution of three subjects of study and research in residence at the college.

2. The earning of not less than one hundred credits in the chief or major subject, and of not less than twenty-five credits in each of two minor subjects.

3. The preparation of a thesis, in the major subject, constituting an actual contribution to knowledge and accompanied by drawings if necessary. For the degree of doctor of agriculture the thesis may be modified to meet professional requirements.

4. The passing of final examinations, in both the major and minor subjects, to the satisfaction of the instructors in charge.

¹ All time statements refer to minimum time.

5. A public oral examination.

6. The payment of all fees and college expenses required.

The degrees of master of science, master of agriculture and master of landscape architecture are conferred upon graduate students who have met the following requirements:—

1. The devotion of at least one year and a half to the prosecution of study in two subjects of study and research, not less than one full college year of which must be in residence. In the case of a master of landscape architecture the student must follow the prescribed course of study.

2. The earning of not less than fifty credits in the chief or major subject, and of not less than twenty-five credits in the minor subject. Students pursuing the course in landscape architecture will devote all of their time to the established course, and meet the conditions of one year of experience outside the college.

3. The preparation of a thesis in the major subject, constituting an actual contribution to knowledge, and accompanied by drawings if necessary.

4. The passing of final examinations, in both major and minor subjects, to the satisfaction of the professors in charge.

5. The payment of all fees and college expenses required.

The fee for the degree of master of science, master of agriculture, or master of landscape architecture is \$10, and for the degree of doctor of philosophy or doctor of agriculture, \$25.

COURSES OFFERED.

Courses available as major subjects for the degree of doctor of philosophy:—

Agricultural Economics.
Agronomy.
Botany.
Chemistry.
Entomology.

Horticulture.
Microbiology.
Pomology.
Rural Sociology.

Courses available as major subjects for the degree of master of science:—

Agricultural Economics.
Agricultural Education.
Agriculture.
Agronomy.
Animal Husbandry.
Botany.
Chemistry.
Entomology.

Horticulture.
Mathematics and Physics.
Microbiology.
Pomology.
Poultry Science.
Rural Sociology.
Veterinary Science.

Courses available as major subjects for the degree of master of agriculture:—

Agronomy.

Animal Husbandry.

Poultry Science.

The course in Landscape Architecture leads to the degree of master of landscape architecture.

Courses available as minor subjects:—

Agricultural Economics.
Agricultural Education.
Agriculture.
Agronomy.
Animal Husbandry.
Animal Pathology.
Botany.
Chemistry.
Entomology.

Horticulture.
Landscape Architecture.
Mathematics and Physics.
Microbiology.
Pomology.
Poultry Science.
Rural Sociology.
Zoölogy.

GENERAL OUTLINE OF COURSES FOR ADVANCED DEGREES.

Agricultural Economics.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must have had the following courses or their equivalent: Economics and Sociology 50, Agricultural Economics 26 and 50.

REQUIRED WORK. — Candidates must take the following courses: Agricultural Economics 51, 52, 53 and 79. These courses, specially arranged for graduates, may be taken as Courses 120, 170, 155 and 180 for graduate credit. In addition, candidates must take Courses 110, 111, 130, 165 and 175 in Agricultural Economics; Rural Sociology 27 and 50, or equivalent courses; and Economics and Sociology 51 and 52, or equivalent courses.

Each candidate will be required to have a working knowledge of the general field of economics, the history of agricultural economics, the theory of agricultural economics, the problems of agricultural production, land tenure, land problems, agricultural commerce, agricultural co-operation, agricultural credit, statistics of agriculture, and prices, markets and marketing.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — The same as for the degree of doctor of philosophy, except that there is no language requirement.

GRADUATE COURSES OFFERED.

110. THEORY OF AGRICULTURAL ECONOMICS. — Readings in French, German and English on economics of agriculture. Alternate years, odd, 200 hours.

Credits, 3.

Professor CANCE.

111. CURRENT ECONOMIC PROBLEMS AND LITERATURE. — Department seminar throughout the year.

Credit, 1 each term.

120. HISTORICAL AND COMPARATIVE AGRICULTURE. — General survey. May be taken in connection with Course 51. Spring term, yearly.

Credits, 3.

Assistant Professor SAWTELLE.

121-122. HISTORY OF AMERICAN AGRICULTURE. — Special studies in the history of agricultural institutions, practices or relations. Fall term, even years.

Credits, 5.

Assistant Professor JEFFERSON.

130. PROBLEMS OF AGRICULTURAL PRODUCTION. — The relation of the farmer to the food supply. May be taken in connection with Course 77. Fall term, yearly.

Credits, 5.

Professor CANCE.

140. LAND TENURE AND THE ACQUISITION OF FARM LAND. — Readings, discussion, original exercises. Alternate years, even.

Credits, 3-5.

Professor CANCE.

145. FARM LABOR. — Reading and investigation.

Credits, 3.

Professor CANCE.

150. AGRICULTURAL COMMERCE, INDUSTRY AND TRADE. — A study of trade movements and commercial activities relating to agricultural products. Fall term, alternate years, odd.

Credits, 3-5.

Assistant Professor JEFFERSON.

* 155. THE AGRICULTURAL MARKET. — A study of the forces, methods and institutions of the market for agricultural products. Spring term, yearly.

Credits, 5.
Professor CANCE.

156. SPECIFIC PROBLEMS IN MARKETING FARM PRODUCTS. — Reports and discussions. Alternate years, odd.

Credits, 3.
Professor CANCE.

160. AGRICULTURAL PRICES. — Winter term, yearly.

Credits, 3.
Assistant Professor SAWTELLE.

161. AGRICULTURAL PRICES. — Spring term, yearly.

Credits, 3.
Assistant Professor SAWTELLE.

165. TRANSPORTATION OF AGRICULTURAL PRODUCTS. — Elementary discussion and report. Winter term, yearly.

Credits, 5.
Professor CANCE.

166. SPECIFIC TRANSPORTATION PROBLEMS. — Original study, reading and report on certain transportation problems related to agriculture. Alternate years, odd.

Credits, 3-5.
Assistant Professor SAWTELLE.

170. CO-OPERATION IN AGRICULTURE. — Elementary problems and discussion. May be taken in connection with Course 50. Winter term, yearly.

Credits, 5.
Professor CANCE.

171-172. SPECIAL PROBLEMS IN CO-OPERATION FOR ECONOMIC PURPOSES. — Study, original investigation and discussion. Every third year, beginning 1922.

Credits, 3-5.
Professor CANCE.

175. AGRICULTURAL CREDIT. — Readings and reports in addition to class lectures on agricultural credit. Taken in connection with Course 78. Spring term, yearly.

Credits, 3-5.
Assistant Professor SAWTELLE.

180. ELEMENTARY PRINCIPLES OF STATISTICS. — Chiefly related to agriculture. Lectures, laboratory studies and original work. Taken in connection with Course 79. Fall term, yearly.

Credits, 5.
Assistant Professor SAWTELLE.

181. SPECIFIC PROBLEMS IN STATISTICS OF AGRICULTURE. — Alternate years, even.

Credits, 3-5.
Assistant Professor SAWTELLE.

185. RURAL LAW. — Corresponds to Course 78. Spring term, yearly.

Credits, 5.
Mr. SMART.

186. STUDIES IN AGRICULTURAL LEGISLATION.

Credits, 3-5.
The DEPARTMENT.

190-195. INVESTIGATION OF VARIOUS PROBLEMS RELATED TO AGRICULTURAL ECONOMICS. — Credit given on basis of time spent and reports submitted.

200. THESIS. — Research work in agricultural economics will be developed by four principal methods, namely, historical, statistical, accounting and general field investigation. In all instances mastery of research methods includes facility in investigation, tabulation and interpretation of results.

Agricultural Education.**MAJOR REQUIREMENTS.***For the Degree of Master of Science.*

PREREQUISITE WORK. — A minimum of 25 undergraduate credits distributed among the following lines of study: philosophy, psychology, history of education, principles and methods of teaching, school organization and administration. Successful teaching experience will receive consideration.

REQUIRED WORK. — At least 50 credits must be earned from the following list of courses in the department or met by accepted transferred credits.

GRADUATE COURSES OFFERED.

100. HISTORY OF EDUCATION.	Credits, 1-10.
104. VOCATIONAL EDUCATION.	Credits, 1-10.
105. CURRICULUM STUDY.	Credits, 1-20.
110. RURAL EDUCATION.	Credits, 1-15.
115. VOCATIONAL TEACHER TRAINING.	Credits, 1-10.
120. THEORY AND USE OF MENTAL TESTS.	Credits, 1-20.
125. SECONDARY EDUCATION.	Credits, 1-15.
130. ADVANCED EDUCATIONAL PSYCHOLOGY.	Credits, 1-20.
135. EDUCATIONAL PHILOSOPHY.	Credits, 1-20.
140. GENERAL EDUCATIONAL RESEARCH.	Credits, 1-20.
145. TEACHING METHOD AND PRACTICE.	Credits, 1-10.
200. THESIS.	Credits, 15-35.

MINOR REQUIREMENTS.

Minor work is offered in the department for the degrees of doctor of philosophy and master of science. Candidates must have had the equivalent of 15 undergraduate credits in education.

Agronomy.**MAJOR REQUIREMENTS.***For the Degree of Doctor of Philosophy.*

PREREQUISITE WORK. — Candidates must have had undergraduate courses 25 and 27 as described in this catalogue, and should have had thorough training in the elements of the natural sciences.

REQUIRED WORK. — Studies will be assigned from the courses listed below. Thesis problems may be chosen in the subject matter of soils, fertilizers or field crops.

For the Degree of Master of Science.

PREREQUISITE WORK. — As above.

REQUIRED WORK. — Assigned work will be selected from the courses listed below.

For the Degree of Master of Agriculture.

PREREQUISITE WORK. — The same as for the degree of master of science in so far as it is essential to establish the professional approach to agronomy, but in addition the candidate must be familiar with agronomical practices.

REQUIRED WORK. — As above.

GRADUATE COURSES OFFERED.

110. STUDIES IN THE CULTURE OF FIELD CROPS.	Credits, 5-20.
115. THE FERTILIZATION OF FIELD CROPS.	Credits, 5-20.
120. STUDIES IN HARVESTING AND STORAGE.	Credits, 5-20.
125. THE IMPROVEMENT OF FIELD CROPS.	Credits, 5-20.
130. TECHNOLOGY OF FIELD CROPS.	Credits, 5-20.
140. SOIL CLASSIFICATION.	Credits, 5-20.
145. STUDIES IN SOIL PHYSICS.	Credits, 5-20.
150. MOISTURE RELATIONSHIPS IN SOILS.	Credits, 5-20.
155. STUDIES IN SOIL MANAGEMENT.	Credits, 5-20.
160. SOIL TECHNOLOGY.	Credits, 5-20.
170. STUDIES IN SOIL FERTILITY.	Credits, 5-20.
180. FERTILIZER TECHNOLOGY.	Credits, 5-20.
190. STUDIES IN LITERATURE.	Credits, 5-20.
200. THESIS.	Credits, 15-50.

MINOR REQUIREMENTS.

Prerequisites are as stated for major work. In addition studies suited to the needs of the candidate will be selected from the above courses.

Animal Husbandry.

MAJOR REQUIREMENTS.

For the Degree of Master of Science or Master of Agriculture.

PREREQUISITE WORK. — Candidate must have had the following courses, or their equivalents, before he can enter graduate work in this department: Animal Husbandry 25, 26, 50, 51, 52, 53, 75 and 78. He should also be able to show evidence of experience in practical animal husbandry.

REQUIRED WORK. — At least 50 credits must be earned from the following list of courses offered by the department.

GRADUATE COURSES OFFERED.

100. ADVANCED BREED HISTORY.	Credits, 10.
110. NUTRITION OF FARM ANIMALS.	Credits, 10.
120. REPRODUCTION OF FARM ANIMALS.	Credits, 10.
200. THESIS.	Credits, 25.

MINOR REQUIREMENTS.

Minor work in animal husbandry may include undergraduate Courses 50, 51, 53, 81 or 82, and such other work in reading and compilation of material as the instructor may outline. Written examinations will be conducted at the completion of each term's work.

Animal Pathology.

MINOR REQUIREMENTS.

Minor work in animal pathology for the degrees of doctor of philosophy and master of science consists of an especially planned course for graduate students. This is not an undergraduate course, but is arranged to meet the needs of graduate

Part II.

students who have not pursued a course in general pathology. It will continue throughout the year and include reviews in gross and microscopic anatomy, physiological, bacteriological, serological, biochemical and morbid anatomical phases of pathology. Written examinations will be given at the end of each term.

100. GENERAL PATHOLOGY. — As described above, fall term. Credits, 5.
120. GENERAL PATHOLOGY. — Continuation of 100, winter term. Credits, 5.
140. GENERAL PATHOLOGY. — Continuation of 120, spring term. Credits, 5.
160. BIOCHEMICAL PHASES OF PATHOLOGY. — Second year, fall term. Credits, 5.
180. PATHOLOGICAL HISTOLOGY. — Second year, winter term. Credits, 5.
- Professor GAGE.

Botany.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — The equivalent of certain undergraduate courses, determined by the department in the case of each student, is prerequisite.

REQUIRED WORK. — Candidates will be required to take Courses 100 through 107 and 180, 190 and 200. Courses 150 through 155 may be taken for graduate credit in certain cases. The maximum number of major credits which may be earned in this way is thirty-two.

For the Degree of Master of Science.

PREREQUISITE WORK. — The requirements are the same as for the degree of doctor of philosophy.

REQUIRED WORK. — Candidates will take Courses 100 and 101 and all courses from 102 through 107 which are given during their term of residence, also 180, 190 and 200. In certain cases Courses 150 through 155 may be taken, but not more than 20 credits may be earned in this way.

GRADUATE COURSES OFFERED.

Courses 100 through 106 are lecture courses. They are given in rotation, except Courses 100 and 101, which come every year.

100. PLANT PHYSIOLOGY. — The lectures will consider, under the nutrition of the plant: its chemical structure, absorption of various nutrient substances and their changes in the plant, assimilation and dissimilation of carbon and nitrogen by autotrophic and heterotrophic plants; under changes in the form of plants: growth and form under constant external factors, the influence of variable external and inner factors on growth, form and development; and under plant movements: the various tropisms, nutations, etc. Supplemental demonstrations, laboratory work and readings in the standard texts and journals. One lecture a week for 36 weeks. Credits, 3.

101. PLANT PATHOLOGY. — A general consideration of the history, nature and causes of plant disease; parasitism, predisposition, immunity, degeneration, natural and artificial infection, dissemination, epidemics, biologic strains, monstrosities and malformations, proliferation, prevention and control, economics of plant diseases. One lecture a week for 36 weeks. Credits, 3.

102. PLANT INHERITANCE. — This course is planned to give the student a comprehensive understanding of the principles and facts of plant inheritance. A study is made of plant variations, Mendel's law of heredity, the physical basis of heredity as established by chromosome behavior, pure lines, mutations, species and graft hybrids, etc. One lecture a week for 12 weeks. Credit, 1.

103. BIOLOGIC RELATIONS. — Consideration of certain phases of the morphological and physiological adaptations of plants with regard to insect visit; the rôle of thorns, hairs, tendrils, glands, etc. Various experiments are made to test out experimentally some of the existing theories concerning biologic adaptations. One lecture a week for 12 weeks. Credit, 1.

104. THE ECOLOGY OF PLANTS. — This course deals with the water, light and temperature relations of plants, and the various adaptations in response to these factors; the various types of plant formation; the migration of plants; the competition of plants; invasion and successions of plants under varied conditions; and the various types of alternations and zonations. One lecture a week for 12 weeks. Credit, 1.

105. PHYSIOLOGICAL PLANT PATHOLOGY. — This course considers those plant diseases not due to bacterial or fungous parasites, but resulting from unfavorable physical or chemical conditions of the soil; from harmful atmospheric influences, such as too dry air, too much moisture, hail, wind, lightning, frost; from injurious gases and liquids; from lack of or too much light; from wounds. A knowledge of the normal physiology of the plant is required. Demonstrations and laboratory work will be given, together with assigned readings. One lecture a week for 12 weeks. Credit, 1.

106. HISTORY OF BOTANY. — An historical survey of the science; lives of noted botanists; history of certain culture plants, such as wheat, corn, coffee, potato, rice, and their influence on civilization; reading. One lecture a week for 24 weeks. Credits, 2.

107. METHODS IN DRAWING AND PHOTOGRAPHING FOR THESIS AND PUBLICATION. — Twelve weeks. Credits, 1-3.

108. THE COMPARATIVE ANATOMY OF GREEN PLANTS. — See undergraduate Courses 61-63.

150. SYSTEMATIC MYCOLOGY. — See undergraduate Courses 52-54.

151. SYSTEMATIC BOTANY OF THE HIGHER PLANTS. — See undergraduate Courses 58 and 59.

152. PLANT HISTOLOGY. — See undergraduate Courses 55 and 56.

153. CYTOLOGY AND EMBRYOLOGY. — See undergraduate Courses 82 and 83.

154. PLANT PATHOLOGY. — See undergraduate Courses 75-77.

155. PLANT PHYSIOLOGY. — See undergraduate Courses 78-80.

180. SEMINAR. — A weekly seminar for members of the department staff, graduate students and major senior students is held, at which important botanical papers are discussed. Attendance and participation are required. Credits, 3.

190. COLLATERAL READING. — Extensive reading of botanical literature in English, German and French, designed to give the student a broad knowledge of the science, is required of all major students. Final examinations are based in part upon this reading course. Credits, 5-10.

200. THESIS. — Each major student is required to select a problem in plant pathology or physiology (in other branches at the discretion of the department) for original investigation, and the thesis must embody a distinct contribution to knowledge. An effort will be made to assign problems having some bearing on scientific and economic agriculture. The thesis work counts for not more than 50 per cent of the total number of major credits required for either degree.

MINOR REQUIREMENTS.

For a minor a student may take such of the work offered by the department as seems best suited to his major course. Courses 150 and 155 are primarily undergraduate work which may be taken for minor credit toward advanced degrees. In most cases no problem will be assigned.

PROFESSORS OSMUN, CLARK, TORREY, DAVIS and DORAN.

Chemistry.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — The candidate must have taken undergraduate Courses 1 to 87, or their equivalent.

REQUIRED WORK. — The candidate will be required to take all the graduate courses listed below. He may also be required to spend at least two terms or one semester at some other recognized institution, pursuing graduate study in chemistry. For the final examinations, questions will be selected from the entire field of chemistry, with special emphasis upon the lines of work covered by the research.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as that required for the degree of doctor of philosophy.

REQUIRED WORK. — The candidate will be required to take Courses 101 and 108 through 114. In addition he will pursue the requirements of one of the following thesis subjects: —

Organic and Biochemistry. — Course 200 and either 105 or 106, and 3 credits for one term selected from Courses 103 (b) or (f), and 104.

Analytical and Industrial Agricultural Chemistry. — Courses 200, 103 (3 credits), and 3 credits for one term selected from Courses 102 and 104 through 107.

Physical Chemistry. — Courses 200, 104, and 3 credits for one term selected from Courses 102, 103 and 105 through 107.

Agricultural Chemistry. — Courses 200, 103 (3 credits), and 3 credits for one term selected from Courses 102 and 104 through 107.

The candidate must pass a final written and oral examination before the department upon undergraduate Courses 1 through 80, as well as upon all graduate work taken in chemistry.

GRADUATE COURSES OFFERED.

101. INORGANIC PREPARATIONS. — Laboratory. The preparation of chemical products from raw materials. The manufacture and testing of pure chemicals. The laboratory work is essentially synthetic in nature, and is designed to aid in acquiring a more adequate knowledge of inorganic chemistry than is to be obtained by chemical analysis alone. Ten to fifteen of the preparations given in Biltz's "Laboratory Methods of Inorganic Preparations" will be made by each student. Any term. Credits, 3.

Assistant Professor SEREX.

102. ADVANCED INORGANIC PREPARATIONS. — Laboratory. Continuation of Course 101. Any term. Credits, 3.

Assistant Professor SEREX.

103. ADVANCED ANALYTICAL CHEMISTRY. — Laboratory. This course may be taken in part as follows: (a) electrolytic analysis, 3 credits; (b) ultimate analysis, 3 credits; (c) special analytical work to meet the needs of the individual student, 3 credits. In addition, parts of undergraduate Courses 62, 76 and 77 may be taken, as follows: (d) fertilizers, 3 credits; (e) insecticides, 3 credits; (f) milk and butter, 3 credits. (a), (b), (c) may be taken any time; (d), (e), (f) must be taken at the time the undergraduate course is given.

Professor PETERS.

104. ADVANCED PHYSICAL CHEMISTRY. — Laboratory. Measurement of the electrical conductivity of solutions; degree of ionization; ionization constants; per cent hydrolysis of aniline hydrochloride from conductivity measurements; solubility product by the conductivity method; velocity of saponification by conductivity; neutralization point by conductivity; vapor pressure determinations; critical temperature of carbon dioxide or sulphur dioxide; transport numbers; preparation and properties of colloidal solutions; transition points by dilatometric method; heat of solution of ammonium chloride and potassium nitrate; adsorption of iodine by charcoal; determination of hydrogen ion concentration. To each student separate work will be assigned. Any term. Credits, 3.

Assistant Professor SEREX.

105. ADVANCED ORGANIC CHEMISTRY. — Laboratory. The preparation of compounds not included in Courses 51 and 52, such as the Kolbe synthesis of salicylic acid; benzophenone and Beckmann's rearrangement; rosaniline, malachite green, Congo red, indigo and other dyes; synthesis of fructose; Grignard reaction. Barnett, Cain & Thorpe, Gattermann, Noyes, Fischer and other laboratory guides are used. To each student separate work will be assigned. Any term. Credits, 3.

Professor CHAMBERLAIN.

106. ADVANCED PHYSIOLOGICAL AND FOOD CHEMISTRY. — Laboratory. An intensive study of some of the more important physiological processes, physiological compounds or food ingredients. Studies of milk, blood, urine or other physiological factors under various metabolic and pathologic conditions. To each student separate work will be assigned. Any term. Credits, 3.

Dr. BUTLER.

108. THEORETICAL CHEMISTRY. — Lectures. The following topics are considered: the compressibility of the atoms; the structure of atoms; the electron conception of valence. Third term. Alternates with Course 109. Credit, 1.

Professor PETERS.

109. ANALYTICAL CHEMISTRY. — Lectures. A general survey of methods and technique covering processes commonly carried out in the laboratory. Gooch's "Quantitative Analysis" is used as a text. Third term. Alternates with Course 108. Credit, 1.

Professor PETERS.

110. ORGANIC CHEMISTRY. — Lectures. Some of the following topics will be considered both theoretically and industrially: alkaloids, synthetic dyes, essential oils, terpenes, rubber, etc.; the study of methods for carrying out general reactions; isomerism, tautomerism, condensation, etc. References: Cain & Thorpe, Cohen, chemical monographs, Lassar-Cohn, Heinrichs, Molinari. First term. Credit, 1.

Professor CHAMBERLAIN.

111. ADVANCED PHYSIOLOGICAL AND FOOD CHEMISTRY. — Lectures. A study of the recent advances in this field. An intimate treatment of the more important physiological factors and their relations to health, nutrition and growth. Second term. Prerequisite, Chemistry 80. Credit, 1.

Dr. BUTLER.

112. THEORETICAL AND PHYSICAL CHEMISTRY. — Lectures. The relation between the constitution and properties of compounds; mutarotation; steric hindrances; stereoisomerism of other elements than carbon; molecular association; similarity between the compounds of silicon and carbon. Third term. Alternates with Course 113. Credit, 1.

Assistant Professor SEREX.

113. THEORETICAL AND PHYSICAL CHEMISTRY. — Lectures. Radioactivity; the application of physical chemistry to industrial chemistry. Third term. Alternates with Course 112. Credit, 1.

Assistant Professor SEREX.

114. SEMINAR. — Conferences, reports or lectures. Three terms, twice a month. Credit, $\frac{1}{2}$.

Professor LINDSEY.

200. THESIS. — Research, and, in the case of a degree, the preparation of an acceptable thesis in agricultural, analytical, organic or physical chemistry, under the direction of the professor in charge of the work, provided that a candidate for the degree of doctor of philosophy shall have had the equivalent of Courses 51, 52, 65 and 86. Credit determined by work done.

MINOR REQUIREMENTS.

Work may be selected from any of the undergraduate Courses 27 and 51 to 80, or any of the graduate courses for which the student is prepared. In addition, the candidate may be required to pass a final written and oral examination before the department upon his entire minor work.

Entomology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Students must have had all the undergraduate courses given at this college or their equivalent. Opportunities to make up any deficiencies will be available while the graduate work is being carried on.

REQUIRED WORK. — The graduate courses consist of lectures on all, and laboratory work on a part, of the subjects given below, together with advanced readings, seminar work and original research.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — A major course for the master of science degree will be about half of the courses listed below.

GRADUATE COURSES OFFERED.

100. MORPHOLOGY. — 1. Embryonic development of insects and polyembryony.
2. Metamorphosis and its interpretations.
3. Advanced external and internal anatomy.
4. Insect histology and physiology.
5. Ancestry and development of insects, including fossil insects.
6. Hermaphrodites in insects.
7. Hybrids.
8. Parthenogenesis, pedogenesis and heterogeny.
9. Chemistry and physics of insect colors.
10. Color patterns, their significance and value.
11. Luminosity.
12. Deformities.
13. Variation in insects.

120. ECOLOGY. — 1. Dimorphism and polymorphism.

2. Mimicry, including concealment, protective devices and warning coloration.
3. Architecture of insect structures.
4. Relation of insects to plant fertilization and its importance.
5. Insect products of value to man.
6. Geographical distribution and methods of distribution of insects, with a consideration of life zones, barriers, etc.

7. Insect migrations.
8. Insect behavior and experimental entomology.
9. Enemies of insects.

140. **ECONOMIC ENTOMOLOGY.** — 1. Control methods.

2. Insect photography and methods of preparing illustrations.
3. Field work and life history investigations with methods for keeping records.
4. Legislation about insects.
5. Studies of insecticides and their application.

160. **SYSTEMATIC ENTOMOLOGY.** — 1. History of entomology and of classifications.

2. Lives and works of prominent entomologists.
3. Abundance of insects.
4. Important collections, public and private; their location and their value.
5. Types of insects; their significance, importance and location.
6. Rules of nomenclature and how they are used.
7. Methods for collecting, preparing, preserving and shipping insects.

180. **SEMINAR.** — Readings and reports on the current literature of entomology; monthly meetings.

190. **COLLATERAL READINGS.** — The best articles on the various topics in entomology are assigned for collateral readings, and are included in the final examinations.

200. **THESIS.** — Original research on one or several topics in morphology, ecology, economic and systematic entomology. This is expected to require from one-half to three-quarters of the total working time of the student.

MINOR REQUIREMENTS.

Minor courses will cover such parts of the work outlined above as will be most likely to prove useful in connection with the majors taken by the students, or in their future work. It is not required that such men shall have had all the undergraduate work in entomology given at this college, their credit for a minor beginning where their own undergraduate training in the subject ended.

Horticulture.

Graduate work is offered in various lines of horticulture. For the most part this is divided into the different departments which constitute the college Division of Horticulture, as follows: pomology, floriculture, landscape gardening, forestry and market gardening. For work in these lines application should be made direct to the heads of the several departments.

Besides this work, however, opportunity is offered for graduate study in general horticulture, including topics from the several organized departments mentioned, and also questions relating to plant breeding, general evolution, propagation, manufacture of horticultural products, etc. This general work is under the direction of Professor Waugh, head of the Division of Horticulture.

Landscape Architecture.

MAJOR REQUIREMENTS.

For the Degree of Master of Landscape Architecture.

PREREQUISITE WORK. — The undergraduate courses in the college known as Landscape Gardening 50, 51 and 52, Drawing 25, 26 and 27, Horticulture 50 and 51, and Mathematics 26 and 27 will be considered prerequisite to graduate work, and any student who has not passed these courses, or their equivalent, will be required to make up such work without graduate credit.

REQUIRED WORK. — Each student before he may receive the master's degree with a major in this department must convince his instructors that he has a genuine aptitude for some branch of landscape gardening, either in design, construction or management.

The minimum period of graduate study will be one and one-half years. At least one year of this time must be spent in residence at the college. One year must also be spent in practice outside the college. The work done outside the college may be prescribed by the department, and must be fully reported to the department in writing. It is essential, further, that the candidate secure the written approval of his employers outside the college. The department may, at its discretion, require a longer period of study at the college or a longer apprenticeship outside the college.

Every student before receiving his master's degree in landscape architecture must have given some thorough and fruitful study to each of the following five departments. As far as possible these studies must be of a practical nature, *i.e.*, they must be made upon actual projects in progress of development.

1. *Theory.* — The principles of esthetics as applied to landscape architecture.

2. *Design.* — The principles of pure design and their application in landscape and garden planning.

3. *Construction.* — The practical methods of carrying out landscape plans, laying out, equipment, organization of working force, time and cost keeping, etc.

4. *Maintenance.* — Methods, organization, cost.

5. *Practice.* — Office work, drafting, estimating, reporting, charges, accounting.

While great freedom is allowed to graduate students in their plans of work, a certain portion of time will always be given to systematic courses of instruction. Courses known as Landscape Gardening 175, 176, 177, 178, 179, 180, 181 and 182 are required, and may or may not be accepted for graduate credit, at the discretion of the department.

GRADUATE COURSES OFFERED.

175. THEORY OF LANDSCAPE ART. — Same as Landscape Gardening 75. First term. Credits, 3.
Professor WAUGH.

176. CIVIC ART. — Same as Landscape Gardening 76. Second term. Credits, 4.
Professor WAUGH.

177. COUNTRY PLANNING. — Same as Landscape Gardening 77. Third term. Credits, 4.
Professor WAUGH.

178. ARCHITECTURE. — Same as Landscape Gardening 78. Third term. Given in alternate years. Credits, 3.
Assistant Professor HARRISON.

179. CONSTRUCTION. — Same as Landscape Gardening 79. Third term. Given in alternate years. Credits, 3.
Assistant Professor HARRISON.

180. THEORY OF DESIGN. — Same as Landscape Gardening 80. First term. Credits, 4.
Professor WAUGH.

181. ESTATE DESIGN. — Same as Landscape Gardening 81. Second term. Credits, 4.
Assistant Professor HARRISON.

182. PARK DESIGN. — Same as Landscape Gardening 82. Third term. Credits, 4.
Assistant Professor HARRISON.

190. THEORY. — Special studies.

Credits, 2-10.

The DEPARTMENT.

191. DESIGN. — Individual problems by arrangement.

Credits, 2-10.

The DEPARTMENT.

192. CONSTRUCTION. — Individual problems by arrangement.

Credits, 2-10.

The DEPARTMENT.

193. MAINTENANCE. — Special studies, experimental work of assigned problems.

Credits, 2-10.

The DEPARTMENT.

194. PRACTICE. — Professional field work under supervision. By arrangement.

Credits, 2-10.

The DEPARTMENT.

195. SEMINAR.

Credits, 1-5.

Professor WAUGH.

200. THESIS. — Each student before receiving the master's degree with a major in landscape architecture must present a satisfactory thesis or complete project. A thesis will consist of a careful original study of some problem in landscape architecture, presented in typewritten form with any necessary illustrations, such as photographs, diagrams, drawings, etc. A project will consist of a completed set of studies of some suitable landscape-gardening problem, such as the design of a park, a real estate subdivision, an extensive playground. Such a project will usually consist of —

(a) Original surveys, including topography.

(b) Block plans, showing original design.

(c) A rendered plan or plans of the main features.

(d) Detailed working drawings.

(e) Estimates of cost.

(f) Complete report and letter of transmittal.

Credits, 5-20.

MINOR REQUIREMENTS.

Any student electing a minor in landscape architecture will be directed to take such courses from the regular catalogue list as may seem most suitable to him. Under ordinary circumstances no other work will be given to students electing minors. In special cases, however, individual problems will be assigned and individual instruction given. These exceptions will be made in cases where, by so doing, it is possible to give the student material assistance in the plan of his major work.

Microbiology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidate must have had Courses 50, 51, 52, 80, 81, 82 and 83, or their equivalents, before he can enter upon graduate work.

REQUIRED WORK. — Studies will be selected from the courses offered below. It will be the purpose of the department to distribute such studies among the courses offered in a manner to gain the greatest efficiency and a comprehensive knowledge of the entire field. The work will be conducted by prescribed readings, critical written reviews, conferences, lectures and laboratory exercises.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — Courses of a basic and applied character selected from the courses offered below which will prepare the student for effective effort.

GRADUATE COURSES OFFERED.

100. HISTORY OF MICROBIOLOGY.	Credits, 5-10.
110. CYTOLOGICAL AND MORPHOLOGICAL STUDIES AND CORRESPONDING TECHNIQUE.	Credits, 5-10.
120. STUDIES IN TECHNIQUE AND METHODS.	Credits, 5-20.
130. PHYSIOLOGICAL STUDIES.	Credits, 5-20.
135. INDUSTRIAL FERMENTATIONS.	Credits, 5-10.
140. AGRICULTURAL MICROBIOLOGY — GENERAL SURVEY.	Credits, 5-20.
141. MICROBIAL STUDIES IN AGRICULTURE.	Credits, 5-10.
150. SOIL MICROBIOLOGY.	Credits, 5-20.
160. DAIRY MICROBIOLOGY.	Credits, 5-20.
170. FOOD MICROBIOLOGY.	Credits, 5-20.
180. HYGIENIC MICROBIOLOGY.	Credits, 5-20.
181. SPECIAL SANITARY OR HYGIENIC STUDIES.	Credits, 5-10.
190. LECTURES AND STUDY OF LITERATURE.	Credit, 1 each term.
200. THESIS. — Some microbiological problem related to agriculture or food. Distributed as may be most beneficial for research work. Time and credit by arrangement.	

Credits, 15-50.

MINOR REQUIREMENTS.

Minor work in microbiology may consist of undergraduate Courses 50, 51, 52, and other courses designed to support the major work, from among the courses offered above. The candidate will also be required to pursue graduate Course 190, or follow a course of reading and conferences through three terms. In case the candidate has had some of these courses, he will be required to take more advanced substitute courses.

Pomology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must have had the equivalent of the courses required for graduation from this college; also sufficient practical experience to enable them to understand and appreciate the problems of orchard practice.

REQUIRED WORK. — The work outlined below will be required of all candidates.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — One-half of the work outlined below, selected to meet the needs of the individual student, will be required.

GRADUATE COURSES OFFERED.

101. EXPERIMENTAL METHODS.	Credits, 15-20.
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A critical study of the methods of research that have been used or may be helpful in pomological work. The following topics will be considered from the point of view of the investigator in pomology.

1. Statistical methods.
2. Measures of growth and yield.
3. The conduct of plot experiments.

4. Methods of soil study in their relation to pomological research.
5. Chemical methods of pomological research.
6. Methods of physiology applicable to fruit plants.
7. Microchemistry.

102. POMOLOGICAL RESEARCH.

Credits, 15-20.

A critical survey of past and current research work in pomology. Semi-weekly meetings for reports and discussions will be held. The following topics will be taken up.

1. Orchard soil management.
2. Soil fertility and fertilizers.
3. Physiology of pruning tree fruits and bush and vine fruits.
4. Fruit bud differentiation.
5. Sterility and Fertility.
6. Genetics of fruit plants.
7. Climatology and winter injury.
8. Advanced morphology.
9. Spraying machinery and equipment.
10. Special practices.

103. ADVANCED LABORATORY WORK.

Credits, 5-12.

Each student will be required to become familiar with the research work of the department and to have a share in it. So far as this has value as graduate work he will receive credit.

104. HISTORY OF POMOLOGY.

Credits, 2-5.

The men, institutions and other influences that have contributed to the development of the science and art of pomology.

105. HORTICULTURAL TAXONOMY.

Credits, 2-3.

A study of the history and development of plant classification with special reference to horticultural plants. A study of modern classification carries with it an expression of opinion as to the evolution of cultivated plants.

106. ADVANCED SYSTEMATIC POMOLOGY.

Credits, 6-10.

The principles of systematic pomology including a study of nut and subtropical fruits not usually dealt with in undergraduate courses.

200. THESIS.

Credits, 40-50.

Each student will be required to carry out an original investigation of an assigned problem. In the planning, executing and interpreting the data of this problem he must show marked ability. The results are embodied in a thesis to be passed upon by the Department and the Graduate Staff.

MINOR REQUIREMENTS.

Students taking a minor in pomology will select such of the above courses as may be suited to their needs. Certain advanced undergraduate courses may also be taken for minor credit.

Poultry Science.

MAJOR REQUIREMENTS.

For the Degree of Master of Science or Master of Agriculture.

PREREQUISITE WORK. — The postgraduate course presupposes all undergraduate work or its equivalent, together with practical experience. Without the latter, students will be unable to handle Courses 140, 150 and 160. At the discretion of the instructor in charge, graduate students may be required to pursue undergraduate courses in other departments without credit.

REQUIRED WORK. — All the courses listed below. Practical poultry work may be required, but no credit will be given for such work.

GRADUATE COURSES OFFERED.

101. READING. — A review of the entire field of poultry literature, covering books, bulletins and special articles, is made, and a written report on one or more subjects required.

110. SEMINAR. — A critical review and a criticism of the more important experiments carried on at various stations in this and other countries; also a study of poultry conditions in foreign countries, methods of management, etc., besides a detailed study of some of the largest poultry projects in this country.

120. ANATOMY (GROSS AND HISTOLOGICAL), PHYSIOLOGY AND SURGERY. — This course requires a careful study of the anatomy and physiology of the fowl. Special attention is given to a study of those structures concerned with practical poultry problems. Instruction in surgical technique, adapted to fowls, may also be given.

130. BREEDING. — The student will carry on such breeding experiments as time and facilities permit. He may also do work in connection with our regular experimental projects. A detailed study of the pertinent literature will be required. Animal Husbandry 5, or its equivalent, is a prerequisite.

140. FEEDING. — A study of the relation of various foods and other substances to the morphology and physiology of the bird, with special reference to such subjects as egg production, feather form and structure, condition of flesh, bone, etc.

150. BROODING. — Studies will be made upon the relation between viability and rate of growth and the following topics: type of brooder, number of chicks in brood, ventilation, humidity, sanitation, exercise and weather conditions; also a comparison of natural methods with artificial methods of rearing chicks.

160. INCUBATION AND EMBRYOLOGY. — A number of problems of a practical, scientific and mechanical nature relating to incubation are considered. The work in embryology is of an advanced nature, dealing with its relation to morphogenesis and heredity, and presupposes an elementary knowledge of the embryology of the chick.

170. POULTRY DISEASES AND SANITATION. — In this course a study is made of various problems in poultry sanitation, with particular reference to methods relating to the control and eradication of disease.

200. THESIS.

MINOR REQUIREMENTS.

Courses 101 and 110 are designed particularly for minors.

Rural Sociology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must present satisfactory evidence of having completed at least 10 credit hours in general sociology and 10 credit hours in general economics; or take such undergraduate courses as the department may designate to satisfy this requirement.

REQUIRED WORK. — Candidates must take or pass by satisfactory examination courses offered by the department for undergraduates bearing the numbers 26, 50, 51, 52 and 75, and such courses in agricultural education and agricultural economics as may be required, not to exceed 10 credit hours in each department. Candidates will be required to select from the courses listed below as graduate courses a field for investigation and intensive study. Candidates for the doctorate must take all courses listed as graduate.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — Not less than 50 credit hours will be required from the courses listed below. The department will make such selection as may best meet the interest of the individual student.

GRADUATE COURSES OFFERED.

177. FIELD WORK OF AN INVESTIGATIONAL NATURE.

178. RURAL SOCIAL SURVEYS.

179-181. SEMINAR.

182. SOCIAL CONDITIONS OF AMERICAN RURAL LIFE.

183. SOCIAL CONDITIONS OF EUROPEAN RURAL LIFE.

184. RURAL INSTITUTIONS.

185. RURAL ORGANIZATION.

186. FARMERS' ORGANIZATIONS.

187. TOWN AND VILLAGE RURAL LIFE.

188. RURAL HEALTH AND SANITATION.

189. RURAL LITERATURE.

190. RURAL GOVERNMENT AND LAW.

200. THESIS.

Veterinary Science.

Work is available in hygiene, veterinary pathology, and other special lines or divisions of the subject.

Zoölogy.

MINOR REQUIREMENTS.

Courses in zoölogy may be available as a minor for the degrees of doctor of philosophy and master of science. The nature of the work will necessarily vary according to circumstances, and may be intensive in a special field and correlated closely with the major work of the student, or it may be of a more general character, depending on the student's needs or previous acquaintance with general zoölogical science.

THE SHORT COURSES.

The short courses offered by the Massachusetts Agricultural College are designed to meet the needs of those, both young and old, who cannot come to the college for the regular college courses. They furnish the student with instruction in modern accepted methods, and are planned to help the farmer and the housewife.

The short courses include:

- A. The Two-Year Course in Practical Agriculture.
- B. The Ten-Weeks' Winter School.
- C. The Six-Weeks' Summer School.
- D. The One-Year Vocational Poultry Course.

REQUIREMENTS FOR ADMISSION TO THE SHORT COURSES. — Students must be at least seventeen years of age, and must furnish satisfactory evidence of good moral character. References are required. There are no entrance examinations. The sole test is ability to do the prescribed work. Students enrolling for the Two-Year Course in Practical Agriculture must have at least a common school education.

EXPENSES OF SHORT COURSES. — The expense of attending any of the short courses is approximately as follows:

Furnished rooms in private houses (per week)	. . .	\$3 to \$5
Board at college dining hall (per week)	. . .	\$7.00
Board with private families (per week)	. . .	\$6.50 to \$9
Registration fee (Ten Weeks' Winter School)	. . .	\$5

Tuition in all the short courses is free to residents of the Commonwealth. Small laboratory fees are charged in some of the courses.

A. TWO-YEAR COURSE IN PRACTICAL AGRICULTURE.

The Two-Year Course in Practical Agriculture is offered to meet the needs of students who for one reason or another cannot take the four-year college course. It is designed to provide a large amount of practical information and training in agriculture and horticulture.

It will appeal, not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming. Although the course is planned to meet the needs of those who are not graduates of high schools, the instruction is not preparatory or elementary in its nature, but is so planned that it will be of value to all. The greater amount of academic training that some of the students may possess will in a measure be offset by the fund of practical knowledge possessed by any who have completed only the elementary schools.

The course is not intended for students enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement either from the principal of the high school or from parent or guardian asking permission to be enrolled.

The Two-Year Course in Practical Agriculture is arranged so as to provide specific vocational training for the particular lines of agricultural work which the students may select. When a student enrolls he is required to state the type of

farming in which he expects to engage; and to select from the following courses of study the one he wishes to pursue:—

1. General agriculture, with animal husbandry as the principal subject.
2. General agriculture, with poultry as the principal subject.
3. Dairy manufactures.
4. General horticulture.
5. Pomology.
6. Floriculture.
7. Vegetable Gardening.

He then pursues a specially arranged course of preparation for that type of work. This specialization does not prevent his securing a general working knowledge of other subjects in which he may be interested.

The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and young women who may not have had the opportunity of securing a high school education.

The first year consists of six months of study at the college. The term begins the first Monday in October, after the opening of the regular college session. This arrangement enables the advanced students to secure a longer period of farm training at a time when their services are especially needed in the harvesting. Classwork is concluded for freshmen with the close of the winter term, when the students are assigned farm jobs. They are available for positions on or before April 1st.

At the close of six months class work students are required to gain six months of practical experience. The college locates positions for students and so far as possible places them on farms where the experience gained will be most valuable. Students are visited by college instructors during this period, and must submit reports on their work at intervals. A total of one hundred and twenty-five credits must be earned to secure a certificate of graduation, of which twenty-five credits, or $\frac{1}{5}$ of the total are assigned to practical training. A student failing to meet the requirements in his six months summer training cannot be enrolled for his second year, since he is not entitled to a certificate of graduation.

During the second year the student spends nine months in resident study, completing the subject pursued in the first year.

Each student is required to file with the treasurer of the college a statement, signed by the town (or city) clerk of the town (or city) from which he enrolls, stating that the parent or guardian of the student is a resident of that town.

CERTIFICATE.—Students completing satisfactorily work prescribed in the Two-Year Course will receive certificates.

Credits earned in the Two-Year Course in Practical Agriculture or in any other of the short courses except the Summer School, do not lead to the college degree.

TUITION.—Tuition is free to residents of Massachusetts. Students who are not residents of Massachusetts are charged a tuition fee of \$60 a term.

B. THE WINTER SCHOOL.

The Winter School, beginning usually about January 1 and continuing for ten weeks, was started several years ago, and has always been very popular, not only with more mature farmers and their wives, but with young men and women who control or manage farms. The courses, though short, are very practical in their nature, and are so arranged that a student may choose such subjects as will enable him to specialize along the line of work in which he is most interested. There is a wide range in the choice of subjects, making it possible for the student to take work for several winters in succession. Many college graduates enroll for the Winter School.

SCHOLARSHIPS.—The Jewish Agricultural and Industrial Aid Society of New York has instituted a system of free scholarships to enable the children of Jewish farmers to attend the short winter course in the States in which they reside. The stipend is sufficient to pay all the expenses of the holder for the course. Such expenses usually amount to from \$100 to \$150. The following courses are offered:—

OUTLINE OF THE TEN WEEKS' WINTER SCHOOL, JANUARY 4 TO MARCH 13.

Soil Fertility. Three lectures per week.

Field Crops. Two lectures and one two-hour laboratory period per week.

Types and Breeds of Livestock. Three lectures and two two-hour laboratory periods per week.

Livestock Feeding. Three lectures per week.

Animal Breeding. One lecture and one two-hour laboratory period per week.

Dairy Bacteriology. Two lectures and one two-hour laboratory period per week.

Animal Diseases and Stable Sanitation. Two lectures per week.

Poultry Husbandry. Five lectures and one two-hour laboratory period per week.

Fruit Growing. Three lectures and one two-hour laboratory period per week.

Market Gardening. Three lectures and two two-hour laboratory periods per week.

Floriculture. Five lectures per week.

Horticultural Manufactures. Two lectures and two laboratory periods per week.

Farm Management. Two lectures per week.

Farm Accounts. Two two-hour laboratory periods per week.

Marketing. Two lectures per week.

Botany. Two lectures per week.

Entomology. Three lectures per week.

Farm Structures. Two lectures and one two-hour laboratory period per week.

Farm Machinery. Two lectures and three two-hour laboratory periods per week.

Rural Sanitary Science and Hygiene. Two lectures per week.

Vocational Guidance. One lecture per week.

Foods. One lecture and two two-hour laboratory periods per week.

The Business of the Household. Three class hours per week.

Home Care of the Sick. Three class hours per week.

Principles and Methods of Vocational Agricultural Teaching. Five exercises per week.

Special Methods in Vocational Agricultural Teaching. Five exercises per week.

Professional Improvement Problems. Five periods per week.

C. THE SUMMER SCHOOL.

The Summer School has been maintained by the college for a number of years. The experience of these years has been of value in arranging short, intensive, practical courses that will meet the needs of teachers, home makers and professional workers who wish instruction in agriculture, agricultural education and home economics, and who can most conveniently come to the college during the summer. The instruction is given by the regular members of the college staff, assisted by outside lecturers. The term period is six weeks.

College credit is now offered for work in the Summer School. For teachers and other students interested in professional improvement, or working for degrees, this change is especially valuable.

While agricultural courses were not presented during the past summer, if a demand develops for such work, it will be included in the program.

The nature of the work of the Summer School is indicated by the following typical program:

Home economics:

Garment making, elementary
Dress design and construction, advanced
Millinery
Textiles
Health education
Foods

Science and Allied Courses:

Dramatic presentation
Design and practical arts
Hygiene and sanitation
General science, A and B
Public health
Food preservation
Flower growing
Botany for the teacher
Cultivated trees and shrubs

Freshman and College Preparatory Courses:

Plane geometry
Higher algebra

Freshman and College Preparatory Courses — *Con.*

Preparatory algebra

Preparatory English

College entrance English

Education and Allied Subjects:

Principles and methods of teaching

Special methods in vocational agricultural teaching

Professional improvement problems

Supervision and administration of agricultural education

Vocational education

Educational psychology

Mental tests

Content and methods in general science

Methods of teaching English in the high school

Method of teaching and supervision of mathematics

Principles of secondary education

Modern philosophy of education

D. ONE-YEAR VOCATIONAL POULTRY COURSE.

PURPOSE. — This course is designed for graduates of the agricultural vocational schools and others who wish to prepare themselves for practical poultry keeping, and can spend only one year at college.

SCOPE. — The work covers seven detailed courses in poultry husbandry, as well as short-course work in fruit growing, market gardening, animal husbandry, or other subjects that will be helpful to poultry raisers. In addition to classroom and laboratory exercises each student is required to put in from eight to ten hours per week at the plant in the care and management of poultry, for the purpose of becoming proficient in the various branches of the work.

ENTRANCE REQUIREMENTS. — Applicants must be at least eighteen years of age and have a good elementary education.

FEES. — There is no tuition for residents of Massachusetts, but a laboratory fee of \$5.00 is required for both the fall and spring terms.

NOTE. — The course is limited to sixteen students. The One-Year Poultry Course begins at the beginning of the winter term and continues until the following December.

GENERAL INFORMATION.

A. FINANCIAL AND ADMINISTRATIVE.

Student Expenses.

TUITION.¹ — Tuition is free to residents of Massachusetts. Students who are not residents of Massachusetts are charged a tuition fee of \$180 a year. Students entering from Massachusetts are required to file with the Secretary a statement signed by either town or city clerk stating that the applicant's father is a legal resident of Massachusetts.

All students entering the college for the first time as undergraduates or two-year students are charged a matriculation fee of \$5, which in event of a student leaving the institution shall, if all bills due the college are paid, be remitted, or which shall upon graduation be considered as payment for the diploma.

DORMITORIES AND BOARD. — The college has dormitory accommodations for about 62 men students. The rooms in the dormitories are occupied by the upper classmen, hence new students find it necessary to room in private houses. The rooms in the college dormitories are unfurnished; for the most part they are arranged in suites of three, — one study room and two bedrooms. These rooms are heated by steam and lighted by electricity; they are cared for by students occupying them. The dormitory rent for each person varies from \$39 to \$66 a year. The rent for furnished rooms in private houses ranges from \$1 to \$4 a week for each occupant. Correspondence in regard to rooms should be addressed to the dean of the college.

Board may be obtained at the college dining hall. At present, the price of board there is \$7 a week.

Expenses.

The necessary college expenses are estimated as follows: —

Tuition: citizens of Massachusetts, free; others, \$180 per year.

	Low.	High.
Matriculation fee, first year	\$5 00	\$5 00
Room in college dormitories or in private houses	39 00	110 00
Board, \$7 per week	245 00	245 00
Laundry, 50 to 85 cents a week	18 00	30 00
Laboratory fees	5 00	25 00
Books, stationery and miscellaneous items	38 00	60 00
	\$350 00	\$475 00

OTHER EXPENSES. — Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining a fraternity or entering into other social activities of the college. Students rooming in college dormitories are obliged to equip their own rooms with furniture. The college assumes no responsibility in regard to the safe keeping of student property either

¹ This statement applies to those registering as regular or two-year students.

during the college term or vacations, except under such special arrangement as may be made with the treasurer. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$400 and \$500 per year.

INITIAL CHARGES.

At the opening of the college year, before students are registered in their classes, the following charges are payable at the treasurer's office:

	Freshmen.	Sophomores.	Juniors and Seniors.
Matriculation fee	\$5 00	—	—
Board (if at college dining hall) four weeks in advance	28 00	\$28 00	\$28 00
Assessment for support of Social Union	1 50	1 50	1 50
Laboratory fees	5 00	5 00	2 00-10 00
Room rent (if in college dormitory)	—	—	12 00-20 00
Student tax for support of athletics ¹	5 00	5 00	5 00
Student tax for support of nonathletic activities ¹	3 00	3 00	3 00

¹ While this is not essentially a college charge, the treasurer of the college acts as collector for the student activity, and all students are expected to make the payment as indicated. The subscription price of the "Collegian" is fixed by the managers; the amount of athletic tax by vote of the student body.

LABORATORY FEES.

The principles observed in establishing laboratory fees are the requirement that students pay for those materials actually used which cannot be supplied by the individual, and that the laboratory fees include a charge sufficient to guard against wanton waste and breakage. Fees may be established for any course without previous announcement. At present, the fees charged are as follows:

Agronomy:	Per Term.	Rural engineering:	Per Term.
Course 25	\$2 00	Course 27	\$1 00
Course 27	2 00	Course 30	1 50
Course 50	2 50	Course 53	1 00
Course 51	2 50	Course 55	1 00
Course 75	2 00		
Course 77	2 50	Floriculture:	
Course 78	2 50	Course 50	1 50
		Course 51	1 50
Animal husbandry:		Course 52	5 00
Course 25	1 50	Course 53	1 00
Course 26	1 50	Course 55	1 50
Course 75	1 50	Course 75	2 00
		Course 76	2 00
Dairying:		Course 77	2 50
Course 50	3 00		
Course 51	3 00	Forestry:	
Course 52	3 00	Course 55	1 00
Course 75	3 00	Course 57	1 00
Course 76	3 00	Course 58	1 00
Course 77	3 00		
Course 78	3 00	Landscape gardening:	
		Course 50	2 50
Farm management:		Course 51	2 50
Course 51	1 50	Course 52	2 50
		Course 76	3 00
Poultry husbandry:		Course 77	3 00
Course 51	2 50	Course 80	3 00
Course 52	3 00	Course 81	3 00
Course 76	2 00	Course 82	3 00
Course 77	2 00		

Part II.

Pomology:

	Per Term.
Course 54	\$4 00
Course 75	4 00

Vegetable gardening:

Course 50	2 00
Course 52	2 00
Course 53	2 00
Course 75	3 00
Course 76	2 00

Drawing:

Course 25	3 00
Course 26	3 00
Course 27	3 00

Botany:

Course 3	1 50
Course 25	1 50
Course 26	1 50
Course 50	2 00
Course 51	2 00
Course 52	2 00
Course 53	2 00
Course 54	2 00
Course 55	3 00
Course 75	3 00
Course 76	3 00
Course 77	3 00
Course 78	3 00
Course 79	3 00
Course 80	3 00

Chemistry:¹

Course 1	3 00
Course 2	3 00
Course 4	3 00
Course 5	3 00
Course 25	4 00
Course 26	4 00
Course 30	3 00
Course 51	5 00
Course 52	5 00
Course 53	5 00
Course 61	5 00
Course 62	5 00
Course 63	5 00
Course 75	5 00
Course 80	4 00
Course 81	5 00
Course 90	5 00
Course 91	5 00
Course 92	5 00
Course 93	5 00
Course 94	5 00
Course 95	5 00
Course 96	5 00
Course 97	5 00

Entomology:

	Per Term.
Course 50	\$1 00
Course 51	1 00
Course 53	1 00
Course 54	1 00
Course 55	1 00
Course 75	2 00
Course 76	3 00
Course 77	1 00
Course 78	3 00

Mathematics and engineering:

Course 27	1 50
Course 78	1 50

Microbiology:

Course 50	5 00
Course 51	5 00
Course 52	5 00
Course 75	5 00
Course 76	5 00
Course 80	5 00
Course 81	5 00
Course 82	5 00
Course 83	5 00

Physics:

Course 25	3 00
Course 26	3 00
Course 27	3 00
Course 50	3 00
Course 51	3 00
Course 52	3 00

Veterinary science:

Course 78	2 00
Course 79	2 00
Course 80	2 00
Course 85	2 00
Course 86	2 00
Course 87	2 00

Zoölogy:

Course 26	3 00
Course 50	3 00
Course 51	3 00
Course 52	3 00
Course 53	4 00
Course 75	3 00
Course 76	3 00
Course 77	3 00
Course 79	2 00

Music (each course)

	3 00
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Rural home life:

Courses 28, 29	1 50
Courses 50, 51	4 00
Course 52	2 00

¹ An additional deposit of \$1 for Courses 1 to 6, inclusive, and \$2 for Courses 25 to 95, will be required to cover individual breakage. In case the laboratory breakage does not equal the deposit, the balance will be refunded.

Rooms.

Students are expected, as far as possible, to occupy rooms in the college dormitories. Students who do not live in the college dormitories must secure rooms approved by the college. The assignment of rooms, and the general supervision of the housing of students, is in charge of the dean. At the end of each college year all unoccupied rooms will be thrown open for selection, and will be assigned to students according to classes.

Living Accommodations for Women Students.

Women students attending the college live in a dormitory provided for them, and take their meals at Draper Hall, which is located a short distance from the women's dormitory. The women's dormitory accommodates 98 girls, and is furnished. The present charge for room and board for women students is \$120 per term.

Student Aid.

SELF-HELP. — Many students are obliged to find work of some sort to earn their way through college. A few men have met their entire expenses in this manner, many more have paid a large part of their expenses, and many have earned a small proportion of the cost of their college education; but the college recommends that no new student enter without having at least \$200 and preferably \$300 with which to pay his way until he can establish himself in some regular work. The college does not encourage students to enter without money in the expectation of earning their way entirely. The ordinary student will find it better either to work and accumulate money before coming to college, or to take more than four years in completing his college course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work.

So far as possible needy students will be employed in some department of the college. The divisions of agriculture and horticulture usually afford the most work, although there are several permanent janitorships available for students, and forty or more students are employed at the dining hall.

Application for student labor should be made directly to Ralph J. Watts, Secretary of the college. Students whose department or class work is not satisfactory are not likely to be continued in student labor. The most desirable and responsible positions are naturally assigned to those needy students who have been in the institution longest and who have demonstrated their need and ability. Students, therefore, may find it rather difficult to obtain all the work they desire during their freshman year; as a matter of fact, however, any student who is capable of doing a variety of things, and who is a competent workman, usually finds little difficulty in obtaining all the work that he can do from the outset.

SPECIAL NOTICE TO NEEDY STUDENTS. — In the last few years the demand for paid labor on the part of new students has far exceeded the amount of employment that the college can offer. The college cannot promise work to any student, particularly to freshmen; it accordingly urges prospective students who are dependent entirely upon their own efforts not to undertake the course before they have earned enough money to carry them through, or nearly through, the first year.

Scholarships.

THE WARD FUND.

The so-called Ward Fund is available for the assistance of needy boys from Hampshire County attending the Massachusetts Agricultural College. This fund is administered by a Board of Trustees not connected with the College. Application blanks for assistance from this fund may be secured from the Treasurer of the College.

THE FREDERICK G. CRANE FUND.

The family of the late Frederick G. Crane of Dalton has presented to the Massachusetts Agricultural College a gift of \$25,000 to establish a fund in memory of Frederick G. Crane, the income therefrom to be expended by the Trustees in aid of worthy undergraduate four-year students of limited financial resources attending the College, preference being given to residents of Berkshire County. Grants made from this fund are to be known as Frederick G. Crane Scholarships.

Applications.

All applications for loans or gifts from this fund should be made to the President, Massachusetts Agricultural College, Amherst, Mass., under whose direction an investigation will be made of the merits of the applicants. The purpose of this investigation will be to insure that the aid is extended to students whose parents are in such financial condition that assistance is necessary in order to insure a college education for the applicants; that it is extended only to students who propose to complete their college education at the Massachusetts Agricultural College; and that it is given to those whose character and scholarship record justifies the assistance available through this fund.

Aid to Freshmen.

Grants from the Crane Fund will be made to freshmen in the form of loans supported by notes bearing indorsements satisfactory to the President of the College. These notes will bear interest and will be negotiable. The College, however, will at its discretion cancel these notes at the end of one year if the scholarship record of the student, his character, and his plans for the future appear to the President so to warrant.

Aid to Sophomores.

Grants will be made to sophomores either on the plan outlined for freshmen as given above or on the plan outlined for juniors and seniors as given below.

Aid to Juniors and Seniors.

Grants to juniors and seniors will usually be in the form of gifts and will be awarded with consideration of the need, of the scholarship, and of the character of the applicant.

Amount of Grants.

The amount of grants from this fund, made either as loans or as gifts, will be determined by the need of the applicant and by the amount of money available in the fund. Generally one may expect to receive from \$50 to \$300 per year.

General Considerations.

In harmony with the provisions of the bequest, preference will be given to applicants for aid who reside in Berkshire County; but the cases of deserving students from other parts of the State will be given due consideration, and such students may under certain conditions be aided in preference to the residents of Berkshire County.

Awards will be made to girls and boys without discrimination.

Memorial Hall.

Soon after the close of the World War the alumni, students, faculty and friends of the college subscribed \$150,000 for the erection of a soldier memorial building to be placed on the college campus. This building was completed in the summer of 1921. It is designed to serve as headquarters for the student activities, and as the center of the social life of the institution.

In the basement are bowling alleys, pool tables, a store, post office and barber shop. On the main floor are eight offices for leaders of various student activities, a large reading room, and a beautiful memorial room in which is found the tablet

bearing the names of the sons of the college who gave their lives in the great war. On the second floor is an auditorium seating 350 persons. This room is also used for college dances.

Student Accounts.

The following rules are enforced concerning student accounts:

No student will be allowed to graduate until all bills due the institution from him are paid.

College charges, such as room rent, laboratory fees and tuition, must be paid in advance, at the beginning of each term. This rule is strictly adhered to, and no student will be allowed to complete his registration until such payments are made.

Every student boarding at Draper Hall is required to pay at the beginning of each term at least one month's board in advance; and no student will be allowed to continue to board at Draper Hall if at any time during the term he is more than one week in arrears in his payment for board.

All money due for student labor shall at the discretion of the treasurer of the college be applied on account toward any bills that a student may owe to the institution.

Honor Council.

All tests and examinations are conducted under the honor system, which is administered by an Honor Council chosen by the students. Recommendations for discipline are made to the President of the college by the Honor Council.

Student Relations.

The customary high standard of college men in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet, if in the judgment of the college authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

Infirmary.

The college maintains an infirmary for the care of sick or injured students.

The buildings now available for this purpose are quite inadequate for the needs of the institution, and it is hoped that in the near future other buildings of this kind may be erected and the general equipment somewhat amplified. At present two small buildings, built especially for hospital purposes, are used for the infirmary.

The following statement outlines the plan followed in the management of the infirmary with respect to students:—

MANAGEMENT OF THE INFIRMARY.

Supervision.

1. The infirmary is under the *general supervision* of Prof. Charles E. Marshall, who is designated as Supervisor of the Infirmary. A resident nurse is in *immediate* charge of the infirmary.

Use of Infirmary.

2. Students are urged to go to the infirmary at any time that they are in need of the services rendered by the resident nurse or by a town physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that the majority of the students will go to the infirmary at his suggestion. This understanding, however, should in no way deter students from going to the infirmary voluntarily at any time.

General Health.

3. Students are urged to consult the physical director or the resident nurse immediately when signs of physical disorder appear. Severe attacks of cold or other forms of illness can usually be avoided if treatment is administered in the incipient stage. The purpose of the infirmary is to help maintain the general good health of the students, as well as to furnish a suitable place for professional attention in cases of severe illness or accident.

General Fee.

4. The infirmary fee will be at the rate of \$2 a day, and will be charged when one or more meals are obtained at the infirmary, or when the student remains at the infirmary for one or more nights. A nominal charge will be made to outpatients for miscellaneous treatment of a minor character.

Additional Expenses.

5. In addition to the fee charged, as specified in paragraph 4, the following additional expenses will be charged to the patient:—

(a) *Nurses.*— In case a special nurse is required for the proper care of an individual, the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) *Professional Service.*— If a student requires medical attention by a physician, he will be required to select his physician and become responsible for fees charged by the physician.

(c) *Supplies.*— Special medical supplies prescribed by a physician or nurse will be charged to the patient.

(d) *Laundry.*— Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

B. COLLEGE ACTIVITIES.

General Exercises.

Chapel exercises are held two mornings each week. On Thursdays during the fall term, and on Wednesdays during the winter and spring terms, an afternoon assembly is held, to which some prominent layman or professional man is invited to speak. The object of these assemblies is to bring to the students discussions of topics of present-day interest. A special chapel service on Sunday is held during the winter months. Students are required to attend these general exercises, although the president is authorized to excuse from chapel any student who may object to attendance thereon because of his religious scruples, provided his request for excuse therefrom is endorsed by his parent or guardian.

Student Activities.

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts Agricultural College Social Union was established in 1907.

All students become members of the union by paying a small fee. In the fall and winter months the union gives a series of entertainments, free to students and faculty.

The College Senate is composed of representatives of the junior and senior classes. This body serves as a general director of undergraduate conduct, and represents before the faculty the interests of the student body.

The Young Men's Christian Association and the Young Women's Christian Association are active both socially and religiously. A Catholic club has also been organized.

Intercollegiate and intermural athletic contests are held throughout the year in the leading sports, including football, baseball, track, hockey and basketball. The athletic board, composed of alumni, faculty and students, has charge of finances, schedules, and general policies governing athletics.

The musical clubs include an orchestra and a glee club. These give a number of concerts, usually followed by dancing, during the year, both in Amherst and on tour. A dramatic club, The Roister Doisters, present annually a revue and two plays, one in connection with the promenade and the other at commencement. There are, besides the declamation and oratorical prize contests, both underclass and intercollegiate debates. The college is a member of a quadrangular league with Maine, New Hampshire, and Vermont. The college publications are the "Massachusetts Collegian," the weekly newspaper; "The Index," the year book; and "The Alumni Bulletin," issued from the office of the alumni secretary. Judging teams under the direction of the departments of Animal Husbandry, Poultry Husbandry, and Pomology compete with teams from other agricultural colleges. The Academic Activities Board, composed of alumni, faculty and students, has charge of the finances, schedules, etc., of the various clubs and publications.

C. ACADEMIC AND DEPARTMENTAL.

Degrees.

Those who complete the four-year course receive the degree of bachelor of science. The fee for graduation from the college is \$5.

Graduate students who complete the assigned courses will receive the degree of master of science upon the payment of a fee of \$10. Credit may sometimes be allowed towards this degree for teaching or other advanced work done in some department of the college.

Graduate students who complete the required three-year course of study, and present a satisfactory thesis, will be granted the degree of doctor of philosophy. The diploma fee in this instance is \$25.

Those to whom degrees are awarded must present themselves in person at commencement to receive them. No honorary degrees are conferred.

The honorary fraternity of Phi Kappa Phi has a chapter at the agricultural college. Students are elected to membership to this fraternity on the basis of scholarship. Elections are made from the highest tenth of the senior class who have attained an average grade of at least 85 per cent during their college course.

Prizes and Awards, 1925.

Prizes and awards are offered annually in several departments for excellence in study or for other special achievements. Awards in 1925 were:

PHI KAPPA PHI ELECTIONS: — Those members of the senior class whose scholarship average has been 85% or above are eligible for election to the honorary Society of Phi Kappa Phi, not more than 10% of the class, however, being elected; elections from the class of 1925 were:

George Lyle Church.

John Sebastian Lacey.

Chauncey McLean Gilbert.

Andrew Wyllie Love.

Carl Edward Frederick Guterman.

Emily Greenwood Smith.

Gordon Hugh Ward.

GRINNELL PRIZES. — The Grinnell prizes, given by the Hon. William Claflin of Boston in honor of George B. Grinnell, Esq., of New York, for excellence in the-

oretical and practical agriculture. The contest is open to those senior students whose record on the registrar's books shows an average standing of 80 or above for the technical work taken in the Divisions of Agriculture and Horticulture during the junior and senior years.

First Prize, \$25, Gordon Hugh Ward.

Second Prize, \$15, Andrew Wyllie Love.

Third Prize, \$10, Leland Little Currier.

HILLS BOTANICAL PRIZES. — The Hills Botanical Prizes, given by the late Henry F. Hills of Amherst for the best and second best herbaria. Competition is open to members of the senior, junior, and sophomore classes.

First Prize, \$20, Majel Margaret MacMasters, 1926.

Second Prize, \$15, Philip Woodell Baker, 1927.

BURNHAM PRIZES. — The Burnham prizes, awarded to the students delivering the best and second best declamations in the Burnham contest. The preliminary contests in declamation are open, under certain restrictions, to freshmen and sophomores.

First Prize, \$15, Maxwell Henry Goldberg, 1928.

Second Prize, \$10, Winthrop Ashley Ames, 1927.

FLINT PRIZES. — The Flint prize, awarded to the student delivering the best oration.

First Prize, \$30, Gordon Hugh Ward, 1925.

Second Prize, \$15, Gustave Taube, 1925.

THE MASSACHUSETTS SOCIETY FOR THE PROMOTION OF AGRICULTURE. — The Massachusetts Society for the Promotion of Agriculture provided for 1925-1926 two prizes of \$300 each to be awarded to members of the class of 1926 for excellence in scholarship and two prizes of \$200 each to members of the class of 1927 who are majoring in the Divisions of Agriculture or Horticulture. Prizes of \$300: Preston Julian Davenport, 1926, and Ray Guild Smiley, 1926. Prizes of \$200: Clarence Howard Parsons, 1927, and Herman Eames Pickens, 1927.

ALLAN LEON POND MEMORIAL MEDAL, FOR EXCELLENCE IN FOOTBALL. — The Allan Leon Pond Memorial Medal for general excellence in football in memory of Allan Leon Pond of the Class of 1920 who died February 26, 1920. In 1925 this medal was awarded to Herbert John Marx, 1925.

SOUTHERN ALUMNI BASEBALL CUP. — The Southern Alumni Baseball Cup awarded to the member of the baseball team who contributed most to the success and reputation of the team, both in respect to skill and spirit. In 1925 this medal was awarded to John Burrington Temple, 1926.

ACADEMICS CONSPICUOUS SERVICE TROPHY. — The Academics Conspicuous Service Trophy awarded to the student who during the previous twelve months has made the most important single contribution to the academic activities. In 1925, awarded to Emil Joseph Corwin of the Class of 1925.

ROISTER DOISTER ONE-ACT PLAY PRIZES. — The Roister Doister One-Act Play Prizes awarded to students presenting the best one-act plays.

First Prize, \$15, Dorothy Luella Leonard, 1928.

Second Prize, \$10, Mary Turek Boyd, 1926.

PHYSICAL EDUCATION. — The trustees of the Frederick Cornelius Eldred Memorial Athletic Fund offer prizes of \$50.00 and \$30.00 to those members of the senior class who present in suitable written form, the most constructive suggestions for the physical development of the student body with particular reference to that portion which does not participate in the major sports.

The essays are not to exceed fifteen hundred words, are to be typewritten when submitted accompanied by the name of the author in a sealed envelope, and must be in the hands of the trustees of the Eldred Athletic Fund not later than April 1st, 1926. The trustees reserve the right to withdraw the offer provided no essays of sufficient merit are received.

Awards in 1925:

First prize of \$50, Donald Briggs Alexander, 1925.

Honorary mention and \$15, Samuel Bernhard Samuels, 1925.

(The conditions of award of these prizes may be changed by announcement by the Trustees of the Fund.)

DEGREES CONFERRED—1925.

MASTER OF SCIENCE (M.Sc.).

Chase, Eleanor Frances, B.Sc., Massachusetts Agricultural College	Amesbury.
Louwsma, Henry, A.B., Hope College	Zeeland, Michigan.
Willard, John Dayton, B.A., Amherst College	Amherst.

BACHELOR OF SCIENCE (B.Sc.).

Alexander, Donald Briggs	Boston.
Armstrong, Bradford	Kensington, Md.
Barnes, Adrian Douglas	South Weymouth.
Bean, Francis Irving	Bradford.
Binner, Roger Stokehill	Amherst.
Bray, Ralph Hastings	Framingham.
Burhoe, Sumner Othniel	Westborough.
Cahill, Carl Winfield	Newburyport.
Casey, Alice Rita	Fall River.
Church, George Lyle	Dorchester.
Cleaves, Leighton Greenwood	Gardner.
Cooke, Robert Gordon	Atlantic.
Corwin, Emil Joseph	Winthrop.
Crosby, John Samuel	Arlington.
Currier, Leland Little	Marblehead.
Davis, Osborne Ozro	Belchertown
Duffy, Leo Francis	Springfield.
Ferranti, Edmund Tony	West Bridgewater.
Frost, Willard Chamberlain	Milford.
Gilbert, Chauncey McLean	North Amherst.
Gleason, Harold Albert	Chester.
Gordon, Samuel Francis	Ipswich.
Gordon, Solomon	Boston.
Grover, Walter Champion	Bernardston.
Guterman, Carl Edward Frederick	Springfield.
Haeussler, Gilbert Julius	Springfield.
Hanscomb, George Wilmont	North Attleborough.
Harris, Clarence Albert	Utica, N. Y.
Holbrook, Lester Morse	Fairhaven.
Holteen, John Gunnar	Quincy.
Hyde, John Worthington	Amherst.
Jack, Melvin Clifton	Amherst.
Kakavas, James Christos	Lowell.
Keith, Lewis Hayden	Bridgewater.
Kennedy, Lowell Francis	Cambridge.
Lacey, John Sebastian	Holyoke.
Landis, Rose Florence (as of the class of 1924)	Amherst.
Lavallee, Louis Palmer	Worcester.
Lord, John Frederic	Methuen.
Love, Andrew Wyllie	Auburn.
Lunt, Samuel Wilde	Cumberland Center, Me.
Marx, Herbert John	Holyoke.
McGeoch, Charles Ryerson	New Bedford.
Mouradian, Garabed Kevork	Bridgewater.
Moxon, David	Holyoke.
Nelson, Paul Redfield	Holyoke.
O'Connor, Arthur Maxwell	Amherst.
Oliver, Charles Frank, Jr.	Brockton.
Parker, Donald Llewellyn	North Adams.
Peltier, Xavier Paul	Spencer.
Poey, Frederick	Boston.
Reynolds, Joseph Sagar	Attleboro.
Roberts, Verne Edward	Amherst.
Root, Frank Edson	Bernardston.
Ross, Charles Frederick	Lee.
Ross, Donald Ernest	Amherst.
Rowell, Elwyn Joseph (as of the class of 1924)	Amherst.
Rowley, Harold Frederick	West Wareham.
Samuels, Samuel Bernhard	Holyoke.
Sazama, Robert Francis	Northampton.
Sheridan, Irwin Scott	Mansfield.
Shumway, George Francis	Monson.
Simpson, Gilbert	Holyoke.

Part II.

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Slack, Marion Florence	Allston.
Slown, William Arnold	Shelburne Falls.
Smith, Emily Greenwood	Stockbridge.
Taube, Gustave	Holyoke.
Taylor, Milton Wight	Chatham.
Templeton, Robert James	Boston.
Thornton, Clarence Percy	Pelham.
Tower, Emerson	Meshanticut, R. I.
Ward, Gordon Hugh	Englewood, N. J.
Waterbury, Arthur Logan	Medford.
Whittum, Walter Willard	Springfield.
Wilcox, Stanley Dewey	Springfield.
Wilder, Frank Harris	Sterling Jct.
Woodbury, Samuel Lawrence	Springfield.
Zwisler, Frederick Fisher	Holyoke.

BACHELOR OF VOCATIONAL AGRICULTURE (B.Voc.AGRI.).

Cassano, Joseph	Groveland.
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REGISTRATION, 1925-26.

AS OF NOVEMBER 1, 1925.

GRADUATE STUDENTS.

Arrington, Luther B.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Ayers, Theodore T.	Amherst.
B.Sc., Pennsylvania State College.	
Bailey, John S.	Amherst.
B.Sc., Michigan Agricultural College.	
M.Sc., Iowa State College.	
Bartlett, Frederick S.	Westfield.
B.Sc., Massachusetts Agricultural College.	
Boylston, Ward N.	North Amherst.
A.B., University of New Hampshire.	
Cassidy, Morton H.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Chesley, George L.	Concord, N. H.
B.H., Springfield Y. M. C. A. College.	
Cupery, Martin E.	Friesland, Wis.
A.B., Hope College.	
Doran, William L.	Amherst.
B.Sc., M.Sc., Massachusetts Agricultural College.	
Foley, Mary J.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Garabedian, Hovanes	Smyrna, Asia Minor.
B.A., International College, Smyrna.	
Garvey, Mary E. M.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Gates, A. Avery	Hampton, Conn.
Ph.B., University of Chicago.	
B.D., Chicago Theological Seminary.	
M.Pæd., Hartford School of Pedagogy.	
S.T.M., Crozer Seminary.	
Gates, Clifford O.	Kokomo, Ind.
B.S.A., Purdue University.	
Gilligan, Gerald M.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Hallowell, Elizabeth	Amherst.
A.B., A.M., Boston University.	
Holbrook, Lester M.	New Bedford.
B.Sc., Massachusetts Agricultural College.	
Hyde, John W.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Kelly, Oliver W.	Fort Collins, Col.
B.Sc., Colorado Agricultural College.	
Lanpbear, Marshall O.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Love, Andrew W.	Auburn.
B.Sc., Massachusetts Agricultural College.	
Mack, Merrill J.	Amherst.
B.Sc., Pennsylvania State College.	
Mayo, William I., Jr.	Northampton.
B.Sc., Massachusetts Agricultural College.	
McDonnell, Anna H.	Florence.
A.B., Smith College.	
Mortensen, Harry T.	Amherst.
B.Sc., Michigan Agricultural College.	
Moxon, David	Holyoke.
B.Sc., Massachusetts Agricultural College.	
Nielson, Knute W.	McLean, Va.
B.Sc., University of Maryland.	
Pendleton, Harlow L.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Percival, Gordon P.	Medfield.
B.Sc., Massachusetts Agricultural College.	
Prescott, Glenn C.	Florence.
B.A., University of Maine.	
Raleigh, George J.	Amherst.
B.Sc. in Agr., Kansas State Agricultural College.	
M.Sc., University of Nebraska.	
Richmond, E. Avery	Brockton.
B.Sc., Dartmouth College.	

Part II.

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Ring, Gordon C.	B.Sc., M.A., Wesleyan University.	Amherst.
Ross, Charles F.	B.Sc., Massachusetts Agricultural College.	Lee.
Rubinwitch, Murray M.	B.Sc., Harvard College.	Springfield.
Sanborn, Joseph R.	B.Sc., Massachusetts Agricultural College.	North Amherst.
Sessions, Alwyn C.	B.Sc., Utah Agricultural College.	Logan, Utah.
Seymour, Frank C.	A.B., Harvard University. B.D., Union Theological Seminary.	North Amherst.
Street, Orman E.	B.Sc., South Dakota.	Reville, S. Dak.
Swanback, Tore R.	Agronom, Agricultural College of Ultuna, Sweden.	North Amherst.
Thies, Emily P.	B.Sc., Michigan Agricultural College.	Amherst.
Thies, Wilbur H.	B.Sc., M.Sc., Michigan Agricultural College.	Amherst.
Van Meter, Ralph A.	B.Sc., Ohio State University.	Amherst.
Weiss, Foster H.	B.Sc., Connecticut Agricultural College.	Springdale, Conn.
Willard, John D.	B.A., Amherst College. M.Sc., Massachusetts Agricultural College.	Amherst.
Wofford, Gus C.	B.Sc., Clemson College.	Laurens, S. C.
Yaxis, T. George	B.Sc., New Hampshire State University. M.Sc., Cornell University.	Amherst.

Registered after the Catalogue for 1924 was published.

Binner, Roger S.	B.Sc., Massachusetts Agricultural College.	Amherst.
Crabtree, Margaret C.	A.B., Radcliffe College.	West Barrington, R. I.
Dame, Mabelle C.	A.B., Radcliffe. A.M., Columbia.	Amesbury.
Gates, A. Avery	Ph.B., University of Chicago. B.D., Chicago Theological Seminary. M. Pæd., Hartford School of Pedagogy. S. T. M., Crozer Seminary.	Hampton, Conn.
Gray, Margaret F.	B.Sc., Iowa State College.	Morgantown, W. Va.
Hale, Frank H.	A.B., St. Michael's College.	Hatfield.
Jordan, Clifford R.	B.Sc., Bates College.	Mechanic Falls, Me.
Lacroix, Donald S.	B.Sc., Massachusetts Agricultural College.	Amherst.
La Montagne, Marion E.	B.A., Smith College.	Northampton.
Lanphear, Marshall O.	B.Sc., Massachusetts Agricultural College.	Amherst.
Larkin, Clarence J.	B.A., Amherst College.	Haydenville.
Nelson, Carl	B.Sc., Massachusetts Agricultural College.	Gloucester.
Norwood, Howard L.	B.Sc., Massachusetts Agricultural College.	Dorchester.
Patch, Henry L.	B.Sc., Massachusetts Agricultural College.	Wenham.
Perry, John T.	B.Sc., Massachusetts Agricultural College.	Waltham.
Proctor, Ralph W.	B.Sc., Tufts College.	Arlington Heights.
Richardson, Lewis E.	B.Sc., Massachusetts Agricultural College.	Rockville.
Robertson, William F.	B.Sc., Massachusetts Agricultural College.	Amherst.
Stickel, Paul W.	B.Sc., New York State College of Forestry. M.F., Yale School of Forestry.	Brooklyn, N. Y.
Talmage, Harry J.	B.Sc., Massachusetts Agricultural College.	Hatfield.
Wilkins, Roland L.	B.Sc., University of Maine.	North Jay, Me.

CLASS OF 1926.

Baker, Francis Everett	Hopkinton	Phi Sigma Kappa.
Baker, Frederic Allen	Springfield	Phi Sigma Kappa.
Barber, Elmer Everett	Jamaica Plain	Kappa Epsilon.
Bartlett, Herbert Franklin	West Springfield	Alpha Gamma Rho.
Block, Harry William	Maplewood	13 South College.

Bosworth, Marguerite Rose	Holyoke	Abigail Adams House.
Bosworth, Maude Elinor	Holyoke	Abigail Adams House.
Bower, James, Jr.	Holyoke	Kappa Epsilon.
Boyd, Mary Turk	Ontega, Fla.	Abigail Adams House.
Bruorton, Earle Wallace	Reading	French Hall.
Budge, William Karl	Mattapan	3 North College.
Burnham, James Erastus	Springfield	Lambda Chi Alpha.
Burt, Stanley Lyman	Easthampton	Alpha Sigma Phi.
Cassidy, Marion Stewart	Wellesley	Abigail Adams House.
Cormier, Francis Joseph	Newtonville	Phi Sigma Kappa.
Coughig, Philip Henry	Beverly	Q. T. V.
Davenport, Preston Julian ¹	Shelburne Falls	Q. T. V.
Davis, Evelyn Louise	Springfield	Abigail Adams House.
Dick, Ernest Albert	Lawrence	Alpha Gamma Rho.
Dodge, Eliot Perkins	Beverly	Theta Chi.
Doolittle, Alden Hartwell	Northfield	The Aggie Inn.
Douglass, Earle Lawrence	Springfield	Alpha Gamma Rho.
Dow, Philip Norman	Bolton	Alpha Gamma Rho.
Drake, Dorothy Madeline	Cambridge	Abigail Adams House.
Durkee, Lewis Leland	Beverly	Theta Chi.
Fessenden, Richard William	Middleborough	Alpha Gamma Rho.
Fitzgerald, Lillian Alice	Holyoke	Abigail Adams House.
Flynn, Alan Foster	Newton	Kappa Epsilon.
Ford, William Warner	Dalton	Alpha Gamma Rho.
Fraser, Carl Arthur	Westborough	Theta Chi.
Fraser, Harry Edward	Jamaica Plain	Kappa Sigma.
Galbraith, Leo Lake	South Hadley	Kappa Gamma Phi.
Gavin, Linus Arthur	Natick	Kappa Sigma.
Goodwin, Marvin Warren	Reading	Alpha Sigma Phi.
Goren, Louis	Chelsea	14 South College.
Grant, Theodore James	Auburndale	13 North College.
Grayson, Herbert	Milford	Alpha Sigma Phi.
Greenwood, Elliott Kelton	Hubbardston	Q. T. V.
Gustafson, Alton Hermon	Campello	Clark Hall.
Hatch, Harold Curtis	Melrose	Alpha Gamma Rho.
Haynes, Walter Lincoln	Springfield	Phi Sigma Kappa.
Hill, Arthur Blair	Walpole	Phi Sigma Kappa.
Hollingsworth, Duncalf Wright	Providence, R. I.	Lambda Chi Alpha.
Howes, Stanley Edward	Brimfield	Alpha Gamma Rho.
Huke, Barbara Allen	South Hadley Falls	Abigail Adams House.
Jameson, Matthew	Everett	Kappa Epsilon.
Jensen, Harold Stery	Westfield	Sigma Phi Epsilon.
Johnson, Philip Gordon	Amherst	West Street.
Jones, Alvah Wesley	Salisbury	Kappa Gamma Phi.
Jones, Lawrence Lakin	Campello	Phi Sigma Kappa.
Kafafian, Sarkis Petros	Amherst	11 North College.
Kelso, George	Reading	Sigma Phi Epsilon.
Lambert, John Ford	Gleasondale	Lambda Chi Alpha.
Langshaw, Hatton, Jr.	New Bedford	Alpha Sigma Phi.
Larsinos, George John	Westfield	17 North College.
Loud, Emery Shaw	North Abington	Theta Chi.
MacMasters, Majel Margaret	Ashburnham	Abigail Adams House.
Mann, Albert Irving	Dalton	Sigma Phi Epsilon.
Moberg, Herbert Eloy	Brockton	Alpha Sigma Phi.
Moran, John	Amherst	51 Northampton Road.
Needham, Basil Arthur	Taunton	Sigma Phi Epsilon.
Nichols, Chester Willard	Natick	54 Lincoln Avenue.
Nichols, Helen Louise	Northampton	200 Bridge Street, Northampton.
Nickerson, Elsie Elizabeth	East Boston	Abigail Adams House.
Norcross, Roy Ellis	Brimfield	Lambda Chi Alpha.
Novick, Leo Altschuler	Amherst	56 Pleasant Street.
Otto, Raymond Herman	Lawrence	Kappa Gamma Phi.
Palmer, Cary Davis	Grafton, Vt.	3 North College.
Peirce, Veasey	Dorchester	Phi Sigma Kappa.
Pomeroy, Elizabeth Clark	Longmeadow	Abigail Adams House.
Potter, Royal Wesley	Providence, R. I.	Phi Sigma Kappa.
Putnam, Ruth Evelyn	Greenfield	Abigail Adams House.
Rainault, Ernest	Holyoke	Kappa Epsilon House.
Reed, Charles Porter	West Bridgewater	Lambda Chi Alpha.
Richards, James Marsh	Springfield	Phi Sigma Kappa.
Richardson, Henry Howe	Millis	Phi Sigma Kappa.
Robinson, Clifton Fairbanks	Newtonville	Q. T. V.
Rowen, Edward Joseph	Westfield	Sigma Phi Epsilon.
Sawyer, Roland Damon, Jr.	Ware	The Aggie Inn.
Shea, Margaret Catherine	Holyoke	Abigail Adams House.
Smiley, Ray Guild	Worcester	Alpha Sigma Phi.
Smith, Margaret Park	Taunton	Abigail Adams House.
Smith, Myron Newton	Millbury	Phi Sigma Kappa.
Smith, Raymond Ellingwood	Salem	French Hall.
Sniffen, Loren Fallow	Westport, Conn.	84 Pleasant Street.
Spooner, Raymond Hildreth	Brimfield	Clark Hall.
Stevens, Alvin Gay	Needham	Kappa Sigma.
Stopford, William Turner	Newtonville	Theta Chi.
Sullivan Donald Clifford	Amherst	25 Gray Street.
Sweetland, Augustus Francis	Stoneham	Q. T. V.
Temple, John Burrington	Shelburne Falls	Q. T. V.
Thompson, Gerald Thayer	Shelburne Falls	Theta Chi.

¹ Candidate for degree of B.Voc.Agr.

Part II.

Thurlow, George Harold	West Newbury	Kappa Sigma.
Tucker, Edwin Locke	Baldwinsville	Kappa Gamma Phi.
Tulenko, John	Sunderland	Sunderland.
Turner, Charles Edgar	Springfield	8 Mt. Pleasant.
Van Alstyne, Lewis Morrell	Kinderhook, N. Y.	Phi Sigma Kappa.
Walsh, Philip Baker	Amherst	35 East Pleasant Street.
Warren, Francis Walter	Stow	Theta Chi.
Wheeler, Ellsworth Haines	Bolton	Alpha Gamma Rho.
White, Earl Martin	Abington	Kappa Sigma.
White, Montague	West Hartford, Conn.	Q. T. V.
Williams, Donald Reed	Northfield	Alpha Sigma Phi.
Wilson, James Stewart	Brooklyn, N. Y.	Phi Sigma Kappa.
Yarwood, George Arthur	Syracuse, N. Y.	101 Butterfield Terrace.

CLASS OF 1927.

Albertini, Paul Flanders	Billerica	Kappa Epsilon.
Ames, Robert Call	Vineyard Haven	46 Pleasant Street.
Amstein, William Gerald	South Deerfield	Q. T. V.
Anderson, Andrew Bremer	Hudson	Lambda Chi Alpha.
Baker, Philip Woodell	Amherst	165 South Pleasant Street.
Barney, Laurence Hillman, Jr.	New Bedford	2 North College.
Berry, George Robert	Northampton	Alpha Sigma Phi.
Biron, Raphael Alfred	Amesbury	Theta Chi.
Black, Lewis Herbert	Williamsburg	Alpha Gamma Rho.
Boden, Frank Joseph	North Wilbraham	29 North Prospect Street.
Botulinski, Frank John	Boston	Kappa Gamma Phi.
Bovarnick, Max	Dorchester	14 South College.
Bray, Frederick Roland	Amherst	5 Hitchcock Street.
Briggs, Lawrence Elliott	Rockland	Theta Chi.
Bruce, Frances Clara	Easthampton	Abigail Adams House.
Buckler, Ella Maude	Pittsfield	Abigail Adams House.
Burrell, Robert Wallace	Abington	Theta Chi.
Campbell, Jean Matilda	West Medford	Abigail Adams House.
Carlson, Oscar Ernest	Boston	Kappa Epsilon.
Cartwright, Calton Oliver ¹	Northampton	Kappa Epsilon.
Chamberlain, Alexander Rodger	Springfield	Lambda Chi Alpha.
Clagg, Charles Floyd	Barnstable	Alpha Gamma Rho.
Cobb, Roger Madison	Wrentham	15 Hallock Street.
Connell, Edward Anthony	Malden	Sigma Phi Epsilon.
Cook, Wendell Burnham	Townsend	Alpha Gamma Rho.
Crooks, Clarence Arthur	North Brookfield	Alpha Gamma Rho.
Cummings, Maurice Andrew	Cambridge	Theta Chi.
Cutler, Samuel	Springfield	15 South College.
Davison, Ruth Eugenia	West Springfield	Abigail Adams House.
Difley, Raymond Frederick	Worcester	Phi Sigma Kappa.
Dole, William Levi	Medford	Kappa Sigma.
Elder, Hubert Gray	Amherst	39 Amity Street.
Farwell, Theodore Austin	Turners Falls	Alpha Sigma Phi.
Foley, Richard Carol	Portland, Me.	Sigma Phi Epsilon.
Galanie, Demetrius Lincoln	Natick	Alpha Sigma Phi.
Goller, Hilda Margaret	Holyoke	Abigail Adams House.
Goodell, Ruth Edna	Westborough	Abigail Adams House.
Greenaway, James Emerson	Springfield	Lambda Chi Alpha.
Griffin, Raymond George	Southwick	Sigma Phi Epsilon.
Haertl, Edwin Jacob	West Roxbury	Kappa Sigma.
Hanson, Daniel Cameron	Dracut	Alpha Gamma Rho.
Harris, Herbert Joseph	Springfield	The Apiary.
Hart, Ralph Norwood	Boston	Alpha Gamma Rho.
Haskins, Ralph Warner	Greenfield	Q. T. V.
Hatch, George Franklin, Jr.	West Roxbury	Theta Chi.
Henneberry, Thomas Vincent	Manchester	2 North College.
Hilyard, Joseph Raymond	Beverly	Q. T. V.
Huthsteiner, Elladora Kathryn	Pittsfield	Abigail Adams House.
Joyce, Milton Goff	Rumford, R. I.	44 Triangle Street.
Krassovsky, Leonid Alexander	Russia	Kappa Gamma Phi.
Kuzmeski, John William	Leverett	Amherst, R. F. D.
LeNoir, Thomas Benjamin	Greenwood	Alpha Sigma Phi.
Lyman, Orlando Hammond	Hilo, Hawaii	Phi Sigma Kappa.
Mahoney, John Joseph	Westfield	Q. T. V.
Malley, Joseph Anthony	Watertown	Kappa Gamma Phi.
Maxwell, Lewis Joseph	Stoneham	West Experiment Station.
McAllister, Robert Wright	North Billerica	Alpha Gamma Rho.
McCabe, Edith Mary	Holyoke	Abigail Adams House.
McVey, Ernest Gregory	Stoughton	Q. T. V.
Merlini, Angelo Albert	North Adams	Sigma Phi Epsilon.
Milligan, Kenneth William	State Line	Lambda Chi Alpha.
Morrill, Alfred Clayton	Natick	Phi Sigma Kappa.
Mullen, Francis Redding	Becket	Sigma Phi Epsilon.
Murdough, Edwin Lincoln	Springfield	Lambda Chi Alpha.
Nash, Norman Blake	Abington	Kappa Sigma.
Nottebaert, Harry Charles	Lexington	Lambda Chi Alpha.
Parkin, William Hildreth	Chicopee	West Experiment Station.
Parsons, Clarence Howard	North Amherst	North Amherst.
Parsons, Josiah Waite, Jr.	Northampton	Kappa Sigma.
Partenheimer, Merrill Henry	Greenfield	Phi Sigma Kappa.
Pickens, Herman Eames	Stoneham	Kappa Gamma Phi.
Powell, Charles Mason	Brookfield	Theta Chi.

¹ Candidate for degree of B.Voc.Agri.

Pratt, Martha Elizabeth	Hadley	116 Pleasant Street.
Pyle, Everett John	Plymouth	Theta Chi.
Reed, James Burbank	Waltham	Theta Chi.
Rhoades, Lawrence Duncan	New Marlborough	Alpha Gamma Rho.
Richter, Otto Hermann	Holyoke	Alpha Sigma Phi.
Rivnay, Ezekiel	Holyoke	56 Pleasant Street.
Robinson, Neil Cooley	Arlington Hts.	2 North College.
Russell, Charles Edwin	West Brookfield	Stockbridge Hall.
Savage, Donald Clifford	South Orange, N. J.	13 Phillips Street.
Sharp, Dallas Lore, Jr.	Hingham	Q. T. V.
Sherman, Willis Whitney	Boston	Stockbridge Hall.
Snyder, Allan	Holyoke	Alpha Sigma Phi.
Spelman, Albert Francis	New London, Conn.	14 North College.
Swan, Frederick Walter	Milton	Q. T. V.
Thompson, Arthur Richard	West Bridgewater	Lambda Chi Alpha.
Tobey, Edwin Albert	Belmont	Phi Sigma Kappa.
Verity, Herbert Foster	Woburn	Q. T. V.
Walker, Almeda Marion	Southbridge	Abigail Adams House.
Whitaker, Lewis Harlow	Hadley	Kappa Sigma.
White, John Everett	Abington	Kappa Sigma.
Wiggin, Jennie May	Worcester	Abigail Adams House.
Williams, Earl Fletcher	Whitinsville	Kappa Epsilon.

CLASS OF 1928.

Abrahamson, Howard Joseph	Waltham	9 South College.
Agambar, Arnold William	Holyoke	81 Pleasant Street.
Allen, Leo Linwood Fenton ¹	Athol	Theta Chi.
Amatt, Jack	Northampton	Kappa Sigma.
Barber, Ruth Moulton	Monson	Abigail Adams House.
Barnard, Ellsworth	Shelburne Falls	Q. T. V.
Bartlett, Kenneth Alden	Dorchester	Lambda Chi Alpha.
Batchelder, Lora Margaret	Easthampton	Abigail Adams House.
Baumgartner, Hans	Pittsfield	11 South College.
Bearse, Gordon Everett	Medfield	1 North College.
Beeman, Marjorie Elise	Ware	Abigail Adams House.
Biggs, Edward Mark	New York, N. Y.	Kappa Epsilon.
Blomquist, Gustave Stanley	Wollaston	Lambda Chi Alpha.
Bradford, David Carlton	Springfield	27 Fearing Street.
Bray, Walter Abner	Amherst	5 Hitchcock Street.
Brockway, Horace Taylor, Jr.	South Hadley	Q. T. V.
Burke, William James	Springfield	81 Pleasant Street.
Campbell, Donald Hays	Shirley	10 South College.
Campion, Thomas Joseph	Amherst	83 Pleasant Street.
Cann, Marvin Francis	Lynn	70 Lincoln Avenue.
Capone, Mario	Chelsea	4 North College.
Chapman, Dorothy Ann	Newtonville	Abigail Adams House.
Clark, Harold Eugene	Montague	East Experiment Station.
Cook, Albert Cairnes	Waverley	12 North College.
Cooke, Dorothy Mabel	Richmond	Abigail Adams House.
Crowley, Francis Jeremiah	Amherst	20 Woodside Avenue.
Cunningham, James Hugh	Atlantic	11 South College.
Davis, Richard Jackson	Arlington	7 North College.
Dean, Carolyn	Utica, N. Y.	Abigail Adams House.
Denton, Ian Oliphant	Attleboro	29 Fearing Street.
Draper, William Hill, Jr.	Watertown	Kappa Sigma.
Dresser, Horatio Malcolm	South Hadley	Alpha Sigma Phi.
Duffield, Susan Muir	Detroit, Mich.	Abigail Adams House.
Elliott, Lawrence William	Waltham	16 South College.
Estes, Wendall Eames	West Duxbury	Care of Mr. Everson.
Ewer, Seth Judson	Leyden	13 Phillips Street.
Ferguson, Thomas Wells, Jr.	Newton Highlands	Theta Chi.
Flemings, Frederic James	Sharon	13 Phillips Street.
Forest, Joseph Henry	Arlington	Alpha Gamma Rho.
Fox, Robert Leo	Ware	Q. T. V.
Frese, Paul Frederick	Waltham	42 Lincoln Avenue.
Galvin, William Frederick ²	Greenfield	15 North College.
Gifford, Charles Edwin ¹	Sutton	Kappa Sigma.
Goldberg, Louis Noah	Wilmington	15 South College.
Goldberg, Maxwell Henry	Stoneham	13 South College.
Golledge, Robert James	Cheshire	Sigma Phi Epsilon.
Gwynn, Arthur William	Roslindale	Q. T. V.
Hall, Barbara Janet	Great Barrington	Abigail Adams House.
Hall, Harriet Phoebe	Great Barrington	Abigail Adams House.
Hall, John Stanley	Lynn	Alpha Gamma Rho.
Harris, Edmund George	Baldwinsville	Kappa Gamma Phi.
Hemenway, Truth Mary	Holden	Abigail Adams House.
Hodson, Alexander Carlton	Reading	Sigma Phi Epsilon.
Holland, Bertram Holbrook	Millis	6 Nutting Avenue.
Homeyer, Frank Fuller	Wellesley Farms	Theta Chi.
Howland, Walter Morton	Conway	44 Sunset Avenue.
Hyde, William Eaton	Amherst	55 Pleasant Street.
Hynes, Ralph William	Holyoke	81 Pleasant Street.
Ingraham, Mary	Millis	Abigail Adams House.
Isham, Paul Dwight	Hampden	Q. T. V.
Kane, Thomas Joseph	Westfield	Q. T. V.
Karrer, Robert Joseph	Hingham	Phi Sigma Kappa.

¹ Candidate for degree of B. Voc. Agri.² Admitted on probation, entrance record not clear.

Part II.

Kennedy, Wellington Waterloo, 3d.	Red Bank, N. J.	Kappa Epsilon.
Kidder, Dana Judson, Jr.	Fayetteville	Theta Chi.
Kimball, John Adams	Littleton	9 North College.
Lane, Donald Ricker	Brockton	7 North College.
LaPrise, Albert Joseph	Great Barrington	9 South College.
Lassiter, Elizabeth Ruth ¹	Holyoke	Abigail Adams House.
Laubenstein, Karl George	Maynard	8 North College.
Laun, George Christian	Waterville, Conn.	70 Lincoln Avenue.
Lawrence, Julia Ruth	Springfield	Abigail Adams House.
Leonard, Charles Smith	Chicopee	Lambda Chi Alpha.
Leonard, Dorothy Luella	West Springfield	Abigail Adams House.
Lincoln, Robert Alexander	Hingham	Theta Chi.
Little, Margaret Adams	Newburyport	Abigail Adams House.
Loring, Douglas Winthrop	Springfield	6 Nutting Avenue.
Marsh, Edwin Elliott	Pittsfield	Q. T. V.
Marston, Leon Chester, Jr. ¹	Brockton	27 Fearing Street.
Marx, Walter Herman	Holyoke	9 South College.
McEwen, Leslie Irving	Winchester	9 North College.
McQuire, Walter Kenneth	Whitinsville	10 North College.
Moore, Ethan Dana	West Springfield	Alpha Gamma Rho.
Morey, Elizabeth Alma	Bolton	Abigail Adams House.
Moriarty, Robert Earl	Monson	21 Fearing Street.
Morland, Harold Laurud ²	Islington	86 Pleasant Street.
Mulhern, Daniel Joseph	Rosindale	6 North College.
Murch, Ralph Gordon	Holliston	8 North College.
Noble, Frank Freeman ²	Fall River	Q. T. V.
Nutting, John Lyman	West Berlin	3 Fearing Street.
O'Connor, Margaret Merrill	Haverhill	Abigail Adams House.
Owers, Robert Hammond	Taunton	Alpha Gamma Rho.
Panzica, Josephine	Boston	Abigail Adams House.
Pickett, Thomas Austin	Beverly	84 Pleasant Street.
Pincombe, Caroline Louise	North Adams	Abigail Adams House.
Plantinga, Oliver Samuel	Amherst	North East Street.
Plantinga, Sarah Theodora	Amherst	North East Street.
Pratt, Marjorie Johnson	Dalton	Abigail Adams House.
Prentiss, Adelaide Hatheway	Plainfield, Conn.	Abigail Adams House.
Preston, Charles Putnam	Danvers	Kappa Sigma.
Preston, Stanley Nichols	Danvers	Kappa Sigma.
Proctor, Harriet Ellise	South Weymouth	Abigail Adams House.
Purrington, Rachel Elizabeth	Shattuckville	Abigail Adams House.
Quinn, John Francis	New Bedford	10 North College.
Redgrave, Arnold Ide	Hopedale	Phi Sigma Kappa.
Reed, Roland Ellsworth	Greenfield	16 North College.
Rice, Cecil Curtis	Spencer	Stockbridge Hall.
Ricker, Albion Barker	Turner, Me.	7 North College.
Roper, Hartwell Eveleth	Closter, N. J.	Farmhouse.
Rourke, Charles Henry	Framingham	8 Kellogg Avenue.
Ryan, Edward Parker ²	Swampscott	Kappa Gamma Phi.
Schappelle, Newell Allen	Hamburg, Pa.	25 Amity Street.
Schmidt, Ernest John	Longmeadow	6 Nutting Avenue.
Simmons, Oliver Dorrance	Beverly	3 Fearing Street.
Smith, Charles James, Jr.	North Wilmington	15 Phillips Street.
Smith, Leslie Rockwell, Jr.	Hadley	Hadley.
Smith, Walter Russell	Holden	Alpha Gamma Rho.
Southgate, Barbara Willson	Sea View	Abigail Adams House.
Spencer, Ernest Leavitt	Lowell	83 Pleasant Street.
Stratton, Frank	Lawrence	86 Pleasant Street.
Sullivan, Charles Burke ²	Fall River	Care of Mr. Everson.
Thomas, Howard	Holyoke	16 North College.
Thompson, Frances Clarinda	Amherst	Mt. Pleasant.
Thompson, Leonard Lewis	Greenfield	12 North College.
Trull, Henry Bailey	Lowell	Sigma Phi Epsilon.
Tufts, Warren John	Jamaica Plain	1 North College.
Tulloch, George Sherloch	Bridgewater	Q. T. V.
Tuttle, Alden Parker	South Milford	Baker Place.
Van Hall, Walter Bernhardt	Rosindale	Alpha Sigma Phi.
Voetsch, George Bernard	Greenfield	Sigma Phi Epsilon.
Washburn, Edward Allen ¹	Marion	Alpha Sigma Phi.
Weiler, Grace Elaine	Amherst	34 Main Street.
Welch, Richard Francis	Salem	Theta Chi.
Wendell, George Goodwin	Belmont	21 Amity Street.
White, Edwin Searles	Worcester	5 North College.
Wilcox, Philip Emerson	Rockland	70 Lincoln Avenue.
Wilder, Edwin Arthur	Sterling Jet.	83 Pleasant Street.
Williams, Florence Dorothea	East Norton	Abigail Adams House.
Williams, Lloyd George	Pittsfield	Kappa Epsilon.

CLASS OF 1929.

Adams, Buell Thompson	Dalton	32 North Prospect Street.
Adams, Harold Sweetnam ¹	Whitinsville	6 Nutting Avenue.
Adams, Stephen ²	Easthampton	32 North Prospect Street.
Alberti, Francis Daniels	Greenfield	10 Nutting Avenue.
Ansell, Harold King	Grantwood, N. J.	73 Pleasant Street.
Avery, Blanche Deane	Greenfield	Abigail Adams House.
Bailey, Stanley Fuller	Middleborough	21 Fearing Street.
Barr, Charles Wesley	Pittsburgh, Pa.	The Davenport.

¹ Admitted on probation, entrance record incomplete.² Candidate for degree of B.Voc.Agr.

Bartlett, Irene Lawrence	Brattleboro, Vt.	Abigail Adams House.
Bates, Ira Spaulding	Whitinsville	6 Nutting Avenue.
Benjamin, Hazel Elvira	Ashfield	Abigail Adams House.
Bern, Philip	Dorchester	15 South College.
Bertenshaw, Edith Louise	Fall River	Abigail Adams House.
Black, Chesley Leman	Reading	97 Pleasant Street.
Blaisdell, Matthew Louis	South Ashfield	Sunderland.
Bliss, Lois Anne	Springfield	Abigail Adams House.
Bond, James Eaton, Jr.	South Lancaster	81 Pleasant Street.
Bowie, Robert Lester	East Milton	6 Phillips Street.
Brackley, Floyd Earle	Strong, Me.	15 Fearing Street.
Burgess, Emory Dwight	Melrose Highlands	86 Pleasant Street.
Canney, George Gridley	South Hadley	81 Pleasant Street.
Carruth, Laurence Adams ¹	Worcester	15 Phillips Street.
Carter, Warner Harris	Amherst	Amherst, R. F. D.
Chadwick, John Shore	Worcester	27 Fearing Street.
Chapin, Alice Streeter	Sheffield	Abigail Adams House.
Chapin, Horace Ralph	Chicopee Falls	51 Amity Street.
Charleston, George Robinson	Everett	101 Pleasant Street.
Cleaves, Charles Shepley	Gardner	9 Fearing Street.
Clements, Charles Robert Crofford	Melrose	86 Pleasant Street.
Collins, Edgar Winslow	East Brimfield	10 Nutting Avenue.
Comins, Lawrence Albert	Millers Falls	3 Nutting Avenue.
Cook, Florence Mary	Hadley	Amherst, R. F. D. 1.
Copson, Harry Rollason	Easthampton	18 Chapman Ave., Easthampton.
Coukos, Andrew ¹	Lynn	21 Pleasant Street.
Cox, Adelbert Winters	Framingham	7 East Pleasant Street.
Crowley, Dennis Michael	Boston	6 North College.
Davis, Donald Austin	Bedford	21 Fearing Street.
Davis, Kendall Edgar	Springfield	9 Fearing Street.
Dawe, Ralph Turner	North Adams	Theta Chi.
Day, William Albert Palmer	Watertown	30 Fearing Street.
Devine, John Warren	Arlington	21 Fearing Street.
Dutton, George Wallace	Carlisle	3 Allen Street.
Dyer, Arnold Walton	Falmouth	86 Pleasant Street.
Edson, William Gordon ¹	East Braintree	84 Pleasant Street.
Egan, William Ambrose	Springfield	Care of Prof. Banta, Sunset Avenue.
Elliot, Davis Haskins	Dartmouth	6 Phillips Street.
Fairbairn, William Richard ¹	Rockland	66 Pleasant Street.
Faulk, Ruth Adelaide	Brockton	Abigail Adams House.
Flint, George Bemis	Lincoln	81 Pleasant Street.
Fonseca, Martin Goodman	Boston	Farmhouse.
Fontaine, Mildred	Fall River	Abigail Adams House.
Foster, Edward Clark	Haydenville	Haydenville.
Foster, Thomas William	Sherborn	7 East Pleasant Street.
Frost, Charles Austin	Belmont	15 North College.
Gagliarducci, Anthony Lewis ²	Springfield	Care of Prof. Banta, Sunset Avenue.
Gasper, Frank ¹	Dighton	Care of Prof. Sears.
Giandominico, Stephen	Walpole	7 Phillips Street.
Goodwin, Laurence Hunter ¹	Wollaston	84 Pleasant Street.
Gordon, George Bauchop	West Newton	44 Sunset Avenue.
Graves, Arthur Hall ¹	Shelburne Falls	3 Fearing Street.
Graves, Lyman William	Conway	9 Mt. Pleasant.
Grover, Richard Whiting	Cambridge	83 Pleasant Street.
Hammond, Marjorie Allerton	Onset	Abigail Adams House.
Harrington, Mary Eileen	Holyoke	Abigail Adams House.
Harris, Robert Henry	Greenfield	53 Lincoln Avenue.
Hawley, Guila Grey	Westfield	Abigail Adams House.
Henderson, Everett Spencer	West Hartford, Conn.	3 Nutting Avenue.
Hinchey, Anne Elizabeth	Palmer	Abigail Adams House.
Hintze, Roger Thomas	Amherst	Aggie Inn.
Horan, Timothy Joseph	Whitinsville	4 North College.
Hotchkiss, Irving Parsell	Green's Farm, Conn.	Farmhouse.
Howard, Martin Stoddard	Northfield, Vt.	97 Pleasant Street.
Howe, Frank Irving, Jr.	Norfolk	17 Phillips Street.
Hunter, Walter Gordon	South Sudbury	13 North College.
Huss, Miriam Hall	Newton Centre	Abigail Adams House.
Johnson, Alice Luvanne	Holden	Abigail Adams House.
Johnson, Clifton Russell ²	Worcester	5 North College.
Jones, Janet Mayo	Amherst	10 Woodside Avenue.
Jones, Leroy Osgood	Greenfield	12 South College.
Kane, Mary Catherine	Holyoke	Abigail Adams House.
Kay, John Reid	Boston	16 South College.
Kelleher, Edmund Louis	West Roxbury	6 North College.
Kelley, Charles Edward	Dalton	32 North Prospect Street.
Kingman, Harriet Cushman	Natick	Abigail Adams House.
Kinney, Asa Foster	South Hadley	42 McClellan Street.
Kreienbaum, Roman Albert	Bridgewater	83 Pleasant Street.
Ladas, Constantine Pericles ²	Boston	Pease Avenue.
Lane, Thomas Edward	East Boston	97 Pleasant Street.
Lincoln, Margaret Elizabeth	Shirley	Abigail Adams House.
Love, Elizabeth Perry	Auburn	Abigail Adams House.
Lyman, Warren Hillsgrave ¹	Florence	21 Fearing Street.
Lynch, Elizabeth Anne	Easthampton	Abigail Adams House.
Macione, Augustus Paul	Peabody	3 Fearing Street.

¹ Candidate for degree of B.Voc.Agric.² Admitted on probation, entrance record incomplete.

Part II.

Manchester, Erford Dayton	Hyde Park	75 Pleasant Street.
Mansur, Paul Buck	Westminster	—
Marsh, Kendall Howe	Holden	6 Nutting Avenue.
Mart, Willis Hilliard ¹	Richmond	13 North College.
McKay, Catherine Mary	Newtonville	Abigail Adams House.
McKittrick, Kenneth Fraser	Boston	16 South College.
Mills, Taylor Mark	Boston	16 South College.
Minsuk, Henry George	Brooklyn, N. Y.	15 Fearing Street.
Morgan, Vernon Dwight	South Yarmouth	86 Pleasant Street.
Morrison, Leonard William	Monson	50 Northampton Road.
Morse, Emily Albertina	Waban	Abigail Adams House.
Murphy, Charles Daniel	Hadley	Hadley.
Nash, Robley Wilson	Abington	11 South College.
Newell, Florine Elizabeth	Westborough	71 Main Street.
Nichols, Edward Holyoke	Montpelier, Vt.	83 Pleasant Street.
Nickerson, Ralph Francis	Attleboro	23 East Pleasant Street.
Nitkiewicz, Boleslaw	Holyoke	Kappa Epsilon.
O'Leary, William Joseph	Northampton	2 Sunrise Avenue.
Packard, Faith Evelyn	Windsor	Abigail Adams House.
Parrish, Ruth Harriet	Great Barrington	Abigail Adams House.
Paulson, John Edward	Holyoke	9 South College.
Pease, Holton Stebbins	Hampden	30 Fearing Street.
Perkins, Esther Janet	Easthampton	112 Pleasant Street, Easthampton.
Perry, Kenneth William	Holliston	3 Nutting Avenue.
Phinney, William Rolland	Willimansett	51 Amity Street.
Plumer, Paul Raymond	Adams	17 Phillips Street.
Pozzi, Joseph John	North Adams	13 Phillips Street.
Prouty, Earl Clinton	Mittineague	75 Pleasant Street.
Ranney, Perry Sidney	Ashfield	44 Sunset Avenue.
Raplus, Harry Edward	Agawam	—
Rayno, Carlton George	Gilbertville	45 Fearing Street.
Rees, Robert Drake	Newtonville	Alpha Sigma Phi.
Regan, John Michael	Holyoke	83 Pleasant Street.
Reynolds, Arthur Raymond	Florence	13 Phillips Street.
Rice, Louise Trask	Greenfield	Abigail Adams House.
Rich, Kenneth Merton	Malden	83 Pleasant Street.
Richards, Lawrence Edward	Dalton	32 North Prospect Street.
Richardson, Evan Carleton	Millis	Care of Mr. Everson.
Robertson, William Brunner	Port Chester, N. Y.	4 Nutting Avenue.
Rooney, Charles Louis	Chester Depot, Vt.	15 Fearing Street.
Rowe, Miriam Louise	Bolton	Abigail Adams House.
Rudquist, Birger John	Dorchester	83 Pleasant Street.
Rutan, Huntington	Wilmington, Vt.	North Hadley.
Sargent, Carmeta Elizabeth	Shrewsbury	Abigail Adams House.
Sargent, Leonard Fessenden Everett	Greenfield	12 South College.
Sears, Louis Alf	Ashby	53 Lincoln Avenue.
Settele, Karl Outhank	Arlington Heights	42 McClellan Street.
Sevens, Harvey William	Greenfield	53 Lincoln Avenue.
Sheridan, James Walter	Bolton	86 Pleasant Street.
Shockro, Harold Joseph	Hadley	Hadley.
Shuman, Ernest Clark	Malden	15 Hallock Street.
Sivert, Gladys Elizabeth ²	Worcester	Abigail Adams House.
Slack, Grace Gertrude	Allston	Abigail Adams House.
Smith, Bessie May	Somerville	Abigail Adams House.
Smith, John Meade, Jr.	Greenfield	Tilson Court.
Snell, Robert Sinclair	Southbridge	Care of Mr. Kneeland.
Soper, Carolyn Emma	Shelburne Falls	Abigail Adams House.
Southwick, Walter Edward	Clinton	75 Pleasant Street.
Spies, Naomi Jeanne	Holyoke	Abigail Adams House.
Stanisiewski, Peter Francis	Amherst	Triangle Street.
Steere, Phillips Bradley	Chepachet, R. I.	4 Nutting Avenue.
Steinbugler, Elizabeth Anne	Brooklyn, N. Y.	Abigail Adams House.
Sullivan, John Ayer	Medford	70 Lincoln Avenue.
Tarr, Roy Simpson	Gloucester	17 Phillips Street.
Tefft, Volney Vanderneer	Ashby	6 Nutting Avenue.
Thayer, Frederick Daniels, Jr.	Shrewsbury	75 Pleasant Street.
Tidd, Douglas Howard	Taunton	83 Pleasant Street.
Tompkins, Earle Alexander	Easthampton	7 Phillips Street.
Tourtellot, Clarence Sampson	Providence, R. I.	83 Pleasant Street.
Trevett, Moody Francis	Milford	66 Pleasant Street.
Tufts, Helene Maevelyn	Jamaica Plain	Abigail Adams House.
Vartanian, Dickran	Springfield	11 North College.
Verner, Charles Edward	Millers Falls	3 Nutting Avenue.
Walkden, Charles Edward	Swansea	3 Allen Street.
Walker, Lewell Seth, Jr.	Amherst	19 Phillips Street.
Ward, Stuart Houghton	Greenfield	66 Pleasant Street.
Warner, Helen Louise ¹	Williamstown	Abigail Adams House.
Weaver, Edward Leigh ²	Enfield	R. F. D. 3, box 64c.
Webber, Dana Otis	Montague	97 Pleasant Street.
White, Lawrence Henry	Amherst	42 High Street.
Whitten, Russell Rutherford	Melrose	86 Pleasant Street.
Whittle, Doris Evelyn	Worcester	Abigail Adams House.
Woodbury, John Sargent	Fitchburg	9 Fearing Street.
Young, Clarence Dow	Springfield	97 Pleasant Street.
Young, Edward Henry	Northampton	233 Elm Street, Northampton.
Zielinski, John Blaise, Jr.	Holyoke	83 Pleasant Street.

¹ Admitted on probation, entrance record incomplete.² Candidate for degree of B.Voc.Agr.

REGISTERED AFTER THE CATALOGUE FOR 1924 WAS PUBLISHED.

Class of 1928.

Wong, Theodore Kaiping China.

Special Student.

Davenport, William Herbert Amherst.

SPECIAL STUDENTS.

Adshead, Mona	Auburn	Abigail Adams House.
Coveney, John Joseph	Amherst	Amherst, R. F. D. No. 3.
Delaney, Rose Margaret	Holyoke	Draper Hall.
Hays, (Mrs.) Florence C.	Amherst	Oneacre.
Pickering, (Mrs.) W. S.	Amherst	86 Pleasant Street.
Pierpont, Mildred	Amherst	23 Pleasant Street.
Pushee, George Frederick	Amherst	North Amherst.
Tamada, Kitano	Japan	97 Pleasant Street.
Thayer, Charles Hiram	Amherst	South Amherst.

GEOGRAPHICAL SUMMARY.

Massachusetts	521	Wisconsin	1
Maine	3	South Carolina	1
New Hampshire	1	Indiana	1
Vermont	6	Virginia	1
Colorado	1	Utah	1
Connecticut	9	South Dakota	1
Rhode Island	5	Hawaii	1
New York	8	Japan	1
New Jersey	4	Russia	1
Pennsylvania	2	Asia Minor	1
Florida	1		
Michigan	1	Total	572

SUMMARY BY CLASSES.

CLASS.	Men.	Women.	Total.
Graduate students	42	5	47
Seniors, 1926	90	15	105
Juniors, 1927	83	11	94
Sophomores, 1928	110	28	138
Freshmen, 1929	140	39	179
Specials	4	5	9
Totals	469	103	572

TWO-YEAR GRADUATES, 1925.

Ackerman, Randolph Spofford	Salisbury.
Ansell, Harold King	Grantwood, N. J.
Arnold, Elliot Frank	Woburn.
Baker, Willis	Boston.
Berry, Harold Edward	Natick.
Breckenridge, Earl	Andover.
Buswell, Albert Henry	Belmont.
Cales, Thomas Winfred	Westfield.
Chilson, Dorothy Lila	Huntington.
Cooper, Janice Marie	Westfield.
Crooks, Donald Lovell	North Brookfield.
Crooks, Harold Baker	North Brookfield.
Cummings, Frank James	North Adams.
Dennett, James Winslow	Plympton.
Derby, Benjamin Edward	Concord Junction.
Devine, Theodore Joseph	Taunton.
Frawley, Earl Alton	New Bedford.
Frieh, George Joseph	Boston.
Fuller, Douglas William	Southampton, N. Y.
Griswold, Christine Mueller	Springfield.
Hall, Ivory Arthur	South Portland, Me.
Harrington, Donald Francis	Framingham.
Hartney, Clyde Clarence	Athol.
Hayn, Ernest Morris	Springfield.
Johnson, Mary	Boston.
Jordan, William Duncan	Somerville.
Kane, John Vincent	Lenox.
Kingsbury, Carl Manning	Woodville.
Lacombe, Albert George	Beverly.
Lawton, Clarence Copeland	Worcester.
Matulewicz, Andrew Joseph	Orange.
Mecum, Ethel Doris	Becket.
Mellor, John Albert	Somerville.
Merryman, Rebecca Eastman	Bradford.
Montague, Guilford	South Deerfield.
Murphy, Thomas Patrick	Woburn.
Myers, Morley Whitfield	Hingham.
Norell, John	Sunderland.
O'Hara, Francis Edward	Worcester.
Patterson, Harold Taylor	Barre.
Payne, Donald Tubbs	Dunstable.
Pickard, Cyrus Warren	Concord Junction.
Pomeroy, Allen Bradford	Longmeadow.
Power, James Anthony	Arlington.
Severance, Charles Almon	Moultonboro, N. H.
Stow, Basil Tenney	Stow.
Thompson, Kenneth Horatio	Revere.
Tower, Lester Milton	South Weymouth.
Welch, John D.	Northfield, Vt.
Woodruff, Webster Clinton	Fitchburg.

SECOND YEAR TWO-YEAR STUDENTS, 1925-26.

Adams, Samuel S.	Swansea	97 Pleasant Street.
Adams, Charles I.	Amherst	29 Main Street.
Alcott, Elverton Hunting	Brookline	A. T. G., North College.
Ames, Bessie Bell	Center Marshfield	Abigail Adams House.
Anderson, Frederick	Grafton	81 Pleasant Street.
Apelquist, Philip Eugene	Orange	Baker Lane.
Bassett, Sherrold Emerton	Everett	86 Pleasant Street.
Belcher, Ranald Ashley	North Abington	North College.
Blood, Charles Andrew Fletcher	Pepperell	Kolony Klub.
Bradley, Howard Courtland	Seekonk	9 Fearing Street.
Brown, Charles Franklin	Worcester	84 Pleasant Street.
Bumstead, Augustine	Medford	14 McClellan Street.
Burgevin, Paul Louis	Port Chester, N. Y.	75 Pleasant Street.
Callander, Murray Austin	Boston	97 Pleasant Street.

Chaffee, Curtis Walter	Enosburg Falls, Vt.	Y. M. C. A., Holyoke.
Clapp, Irving Miller	Northampton	North Amherst, care of Mr. Sheffield.
Clark, Stewart Floyd	Conway	9 Mt. Pleasant.
Cogswell, Sarah Ellen	Westborough	Abigail Adams House.
Crocker, Ralph Herman	Holliston	Kolony Klub.
Davidson, Henry Wilbur	Auburn	A. T. G., North College.
Davis, Charles Ellsworth	North Adams	A. T. G., North College.
DeLano, Fred Lewis	Richmond Hill, N. Y.	Kolony Klub.
DeLorenzo, Joseph	Kingston	35 East Pleasant Street.
Desrosiers, Adolphe Biron	Orange	A. T. G., North College.
Dillon, Frank Edward	New Bedford	Kolony Klub.
Dingley, Elmer Albion	Sherborn	3 Fearing Street.
Donnelly, Edward Boyce	Waltham	73 Pleasant Street.
Foster, William Edward	Ipswich	South College.
Fullam, Kenneth Bullord	North Brookfield	15 Hallock Street.
Goldthwaite, Ernest	Dunstable	Baker Lane.
Hamilton, Thomas Arnold	Fair Haven, Vt.	North College.
Hawes, Ralph Edmund	Sudbury	A. T. G., North College.
Hayden, Charles Ernest	Newtonville	4 Chestnut Street.
Herron, Frank Robert	Greenfield	The Davenport.
Hess, Frank Wesley	Springfield	A. T. G., North College.
Humphrey, Leo Harris	Medford	14 McClellan Street.
Hyde, Gerald	Buzzards Bay	Kolony Klub.
Johnson, Gunnar Theodore	Leicester	A. T. G., North College.
Johnson, Tage Fred	Milton	Kolony Klub.
Kaakinen, Theodore	Fitchburg	Kolony Klub.
Knox, Barbara Howard	Taunton	Abigail Adams House.
Ladd, Joseph Mark	Worcester	4 Hallock Street.
Lahey, Jeremiah Joseph	Plymouth	29 Lincoln Avenue.
Leoncini, Louis John	Hopedale	35 East Pleasant Street.
MacCulloch, William	Salem	Kolony Klub.
Maclean, Theodore Elwin	Spencer	35 East Pleasant Street.
Markert, Ernest Frederick	Amherst	West Street.
Massa, Andrew Louis	East Boston	A. T. G., North College.
Mathews, George Williams	Boston	Kolony Klub.
Maynard, Walter P.	Hopedale	Baker Lane.
McCloskey, Francis Frederick	Winchester, N. H.	35 East Pleasant Street.
McCurdy, John	Gardiner, Me.	6 Kellogg Avenue.
Meeker, Alice Maude	Ludlow	12 North East Street.
Mellen, James Dwight	Athol	A. T. G., North College.
Miller, Edward Dowing	Lee	Kolony Klub.
Nash, Alexander Allaire	Mattapoisett	Kolony Klub.
Newhall, Benjamin Weston	Danvers	84 Pleasant Street.
Nutter, Richard Louis	Melrose	20 Spring Street.
Olympio, Alerico Octaviano	Lome, Togoland, W. C. Africa	101 Pleasant Street.
Parker, Charles Wilson	East Orleans	Eames Avenue.
Parsons, Philip Hinde	Manchester	18 Nutting Avenue.
Pearse, William Thomas	Rockland	
Proaty, Homer Spooner	Furnace	86 Pleasant Street.
Putnam, Frank Wendell	West Newton	86 Pleasant Street.
Richards, Foster Herbert	Lowell	North College.
Riley, Ernest Francis	Dedham	97 Pleasant Street.
Root, Worth Stewart	Colrain	97 Pleasant Street.
Rowell, Elisabeth Johnson	Groton	Abigail Adams House.
Safran, Mayer	Malden	56 Pleasant Street.
Sawyer, Roland Willard	Groton	A. T. G., North College.
Shelnut, Charles Francis	South Boston	North College.
Smith, Edith Caswell	Wakefield	Abigail Adams House.
Sullivan, Maurice Laurence	Peabody	84 Pleasant Street.
Tonseth, Richard G.	Lunenburg	North College.
Tribe, Stanley Gordon	Somerville	18 Nutting Avenue.
Truelson, Stanley Dunham	Somerville	3 Nutting Avenue.
Varnum, William Parker	Collinsville	1 Cottage Street.
Walker, Roger Francis	South Sudbury	86 Pleasant Street.
West, Roger Edward	Hadley	Hadley.
Wetherbee, Roger Frederick	Townsend Harbor	108 Pleasant Street.
Whitcomb, Janet	Haverhill	Abigail Adams House.
Wilson, Herbert Ralph	Chelsea	A. T. G., North College.
Wood, Helen May	Stoughton	Abigail Adams House.
Yocum, Margaret Gardner	Wooster, Ohio	Abigail Adams House.

FIRST YEAR TWO-YEAR STUDENTS, 1925-26.

Aalto, Nestor Armas	Osterville	23 East Pleasant Street.
Anderson, Francis Joseph	Everett	108 Pleasant Street.
Anderson, Ralph Welman	Dorchester	Baker Lane.
Atwood, Donald Meredith	North Abington	6 Phillips Street.
Bennett, Dorothy Dunbar	Watertown	Abigail Adams House.
Bird, James Henry	West Roxbury	South College.
Boelsma, Harmen	Hingham	North Amherst, care of Mr. Sheffield.
Bothfeld, Francese Ray	Harvard	Abigail Adams House.
Bradley, Charles Luther	East Lee	Baker Lane.
Brown, Oscar Joseph	Pittsfield	89 Main Street.
Bullard, Rachel Althea	Orange	Abigail Adams House.
Burrill, Arthur Webster	Wellesley	2 Allen Street.
Burt, Percy Leighton	Vineyard Haven	4 Chestnut Street.
Caffrey, William James	Cromwell	35 East Pleasant Street.

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Callahan, Kathleen Sara	Dorchester	Abigail Adams House.
Chamberlain, Chedo	Newtonville	5 Sunset Avenue.
Cole, Sydney Herbert	Holyoke	17 Kellogg Avenue.
Corbett, Joseph Anthony	Charlestown	14 McClellan Street.
Cover, Frederick Brooke	Lowell	1 Cottage Street.
Doubleday, Helena Anna	North Dana	Abigail Adams House.
Ducharme, Daniel Bazel	Williamansett	525 Chicopee Street, Williamansett.
Duclos, Milton Huggett	West Somerville	6 Phillips Street.
Eastman, Robert Emil	Boston	12 Chestnut Street.
Elder, Roy Wentworth Rockwell	Waverley	56 Pleasant Street.
Farrell, Anthony Patrick	Hyde Park	South College.
Felton, Lindley	Marlborough	8 Kellogg Avenue.
Fitzgerald, Elmer Smith	Leominster	68 Lincoln Avenue.
Flight, George James	Jamaica Plain	15 Hallock Street.
Frothingham, Walter Dudley	Flushing, L. I., N. Y.	3 Nutting Avenue.
Fuller, Lucia Baldwin	Belmont	Abigail Adams House.
Gale, Merton Stuart	Gardner	56 Pleasant Street.
Gay, Edward Ernest, Jr.	Belchertown	8 Kellogg Avenue.
Gibbs, John Edward	Nantucket	5 Sunset Avenue.
Hall, George Winston	Dudley	86 Pleasant Street.
Hallbourg, Robert Francis	Westfield	17 Kellogg Avenue.
Hannigan, Michael Joseph	Milford	Baker Lane.
Harris, Mavis Hazel	Hudson	Abigail Adams House.
Hayward, Francis Dean	Holden	6 Nutting Avenue.
Holland, Leslie Clayton	Holyoke	17 Kellogg Avenue.
Holt, Amos Howard	Norridgewock, Me.	M. A. C. Bungalow.
Hull, Emily Julia	Agawam	Abigail Adams House.
James, Donald Wilcox	Upton	35 East Pleasant Street.
Kane, Harry Busse	Amsterdam, N. Y.	East Pleasant Street, care of Mr. Toole.
Kelley, William Edward	Amherst	Depot Street.
Kenyon, Bernard Holden	Newtonville	5 Sunset Avenue.
King, Arthur Hamilton	Woburn	35 East Pleasant Street.
Ketchen, Andrew Gilmore	Belchertown	8 Kellogg Avenue.
Larson, Carl Philip	Hampden	30 Fearing Street.
Lovejoy, Benjamin Edward	Framingham	6 Phillips Street.
Marks, Stanley Emery	Lynn	35 East Pleasant Street.
Mason, David	Brookline	9 Phillips Street.
Mason, George Arthur	Somerville	8 Allen Street.
Mason, Harold C.	Princeton	Eames Avenue, care of Mrs. M. E. Stone.
May, Arthur Howard	Barnardston	5 Tillson Court.
Nicolai, Mario	Somerville	Baker Lane.
Nilsson, Gustaf Carl	Worcester	60 Pleasant Street.
O'Brien, James John	Amherst	Whitney Street.
O'Neil, Eugene Francis	Amherst	Whitney Street.
Otto, Edmund	West Springfield	86 Pleasant Street.
Oxton, Ralph Ashby	Cambridge	17 Kellogg Avenue.
Parker, Alfred Henry	East Pepperell	7 McClellan Street.
Peabody, Samuel Sumner	Manchester	15 Fearing Street.
Philadelphus, Angelos Gabriel	Melrose	Eames Avenue, care of Mrs. Stone.
Phinney, Edward Barlow	Pocasset	4 Chestnut Street.
Pickard, Ashley Houghton	Littleton	8 Allen Street.
Pitt, Charles Randall	Bridgeport	60 Pleasant Street.
Plude, Alfred Edward	Somerville	12 Chestnut Street.
Post, Philip Malcolm	Worcester	31 East Pleasant Street.
Prendergast, Francis Thomas	Hadley	Middle Street, Hadley.
Price, Ruth	North Attleborough	Abigail Adams House.
Randolph, Marion Gold	Dwight	Abigail Adams House.
Rogers, Norman Wright	Newtonville	33 East Pleasant Street.
Roy, John Plimpton	North Adams	35 East Pleasant Street.
Russ, Sherman Wilder	Sunderland	Sunderland.
Ryan, Bernard Joseph	Pittsfield	4 Hallock Street.
Scott, Raymond Earle	Pepperell	7 McClellan Street.
Scott, Walter Dingley	Woburn	56 Pleasant Street.
Sennott, Miriam Katherine	Boston	Abigail Adams House.
Shepard, Lucius Colton	Princeton	35 East Pleasant Street.
Shorey, Herbert Moulton	Melrose	86 Pleasant Street.
Sime, Frederick Oliver	North Weymouth	86 Pleasant Street.
Smith, Frank Pellman	Somerville	8 Allen Street.
Smith, Ralph Wesley	Hyde Park	9 Phillips Street.
Smith, Roland Whipple	Medford	Baker Lane.
Smyth, James William	Boston	8 Kellogg Avenue.
Spalding, Jacob Franklin	Watertown	30 Fearing Street.
Stewart, Harold Edward	West Boylston	North Amherst, care of Mr. Archibald.
Strong, Arthur Eugene	Amherst	13 Hallock Street.
Sweet, Howard Arthur	Norton	North Amherst, care of Mr. Archibald.
Viale, Mark Raymond	Pittsfield	4 Hallock Street.
Vincent, Archer William	Townshend, Vt.	Baker Lane.
Waldo, Theodore Elias	Boylston Center	Baker Lane.
Warren, Lawrence Philip	Westborough	86 Pleasant Street.
Watson, Neil Buster	Flint, Mich.	86 Pleasant Street.
Weeks, Janet	Somerville	Abigail Adams House.
Whitcomb, Oliver Adams	Littleton	8 Allen Street.
Whited, Morton Ernest	Barnardston	3 Nutting Avenue.
Whitmore, Edwin Ervin	Brockton	60 Pleasant Street.

Wile, Ira Rigby	New York, N. Y.	24 Pleasant Street.
Wilson, Bennett Joshua	Boston	101 Pleasant Street.
Winslow, Rex Parker	Worcester	15 Phillips Street.
Woodburv, Donald Frederick	Sunderland	Sunderland.
Wright, Wendell Philips	Danvers	15 Fearing Street.
Young, Edwin Ralph	Worcester	North Amherst, care of Mr. Archibald.
Zaik, Frank Leo	East Brookfield	8 Kellogg Avenue.

VOCATIONAL POULTRY COURSE, 1925.

Hayward, Richard Homer	Reading	30 Fearing Street.
Lewis, John Grant	Boston	30 Fearing Street.
Lind, Edwin Gustof	Orange	Poultry Plant.

WINTER SCHOOL, 1925.

Abbott, G. Richard	Andover.
Adams, Nellie D.	Wollaston.
Aiken, Harold	East Bridgewater.
Andrew, D. Kilton	Nashua, N. H.
Andrews, Chandler B.	Richmond.
Baker, Marshall	Amherst.
Barbey, John	Montmollin, Switzerland.
Barnard, Merriman	Warwick.
Beauregard, L. M.	Saco, Me.
Bell, Mrs. Ruth E.	Alstead, N. H.
Buckhart, Wm. A.	South Hadley.
Carmalt, Woolsey	Friendsville, Pa.
Carroll, Frank A.	Pittsfield.
Casey, Mary F.	Lawrence.
Chace, Emerson R.	Westport.
Clark, Howard M.	Lyonsville.
Colby, E. C.	Everett.
Colgan, M. R.	Newton Highlands.
Crane, Rosemary	Dalton.
Cross, Roger L.	North Grafton.
Cutler, Albert B.	Boylston.
Daley, John P.	Beverly.
Dodge, W. H.	Leominster.
Dupee, Allan L.	Roslindale.
Dushame, Harold	Middleborough.
Eddy, Robert L.	West Brattleboro, Vt.
Flagg, Nolan R.	Grafton Square.
Fyfe, James G.	Worcester.
Giroux, Joseph E.	Somerville.
Godley, William M.	Boston.
Gregory, Joseph	Allston.
Griffin, Carl R.	Roxbury.
Hammond, Theodore	South Hanson.
Hastings, Clifton E.	Springfield, Vt.
Horton, Clifford	Hadley.
Hoyt, Willis H.	Walpole.
Jakobsen, Bernard	Roxbury.
Jones, S. Orville	Waltham.
Kalashian, M. Sam	Worcester.
Kelly, Shaun	Richmond.
Kern, Edwin	Middleborough.
Lindblad, Herbert V.	Barre.
Lorusso, Albert	Worcester.
MacCollom, Donald B.	Brookline.
MacDonald, Walter	Ayer.
Markert, R. H.	Amherst.
Master, Melvin	Lowell.
Maynard, Kenyon C.	Worcester.
McGlinchey, Frank T.	Waltham.
McKemmie, John E.	Amherst.
McNeil, Marie E.	Boston.
Nicholls, Reginald D.	East Fairfield, Vt.
O'Dowd, James	Quincy.
Outhuse, Donald	Littleton.
Owen, Edna	Goshen.
Paquin, Dr. L. A.	Webster.
Parker, Mrs. Charles W.	East Orleans.
Phelps, Henry	Dudley.
Phillips, Percy E.	Winchendon.
Prentiss, Russell I.	Lexington.
Proctor, Russell A.	Plymouth.
Putnam, Howard A.	Springfield.
Quirk, John F.	Brockton.
Reed, Frank H., Jr.	Greenfield.
Reynolds, Helen C.	Haverhill.
Ribero, G. F.	Franklin.
Robinson, Gordon N.	Lexington.
Rogers, John	Cambridge.
Rogers, Norman W.	Newtonville.
Rooney, Earl G.	Burlington, Vt.
Smith, Sidney A.	Worcester.
Snow, Thomas L.	Conway.
Stevens, Lenox	Portsmouth, N. H.

Part II.

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Sullivan, Daniel J.	Plymouth.
Taylor, Florence M.	Jamaica Plain.
Upton, Earl D.	Brockton.
Urquhart, Arthur E.	Danvers.
Wake, Edwin S.	Florence.
Wakefield, George M.	Lunenburg.
Wells, G. Allison	Springfield.
Wheeler, Frank A.	Springfield.
Wheeler, Hermon T.	Lexington.
Whiting, Rose S.	Berkshire.
Whittemore, Harry F.	Jamaica Plain.
Witherell, Stuart T.	Middlebury, Vt.
Young, Stanley P.	Wellesley Hills.

SUMMER SCHOOL, 1925.

Acheson, Lillian	Fall River.
Adams, Margaret A.	Northampton.
Ahern, Mary A.	Boston.
Allbee, Rachel B.	East Hardwick, Vt.
Alvord, Alice W.	Easthampton.
Ansell, Harold K.	Grantwood, N. J.
Applin, Julia C.	Keene, N. H.
Armitage, Gordon	Smith's Ferry.
Barber, N. Violet	Warwick.
Barrows, Mrs. Robert	Amherst.
Bartholomew, Constance M.	Medford.
Bartlett, Esther	Amesbury.
Beeman, Marjorie	Ware.
Belyea, Beatrice A.	East Bridgewater.
Bennett, Florence	Mendon.
Benoit, Helen	Amherst.
Blanchard, Helen C.	Grafton.
Bogart, Nellie A.	Holyoke.
Bray, F. Roland	Amherst.
Brown, Mildred S.	North Amherst.
Bruorton, E. W.	Reading.
Buchanan, Walter	Methuen.
Burr, Anna	Sunderland.
Burt, Stanley L.	Brooklyn, N. Y.
Burton, John A.	Sharon.
Burton, Mrs. John A.	Sharon.
Cassidy, Morton H.	Amherst.
Chamberlain, Annette	Salem.
Chapman, Mrs. Bessie B.	Swampscott.
Chapman, Gean M.	Bradford.
Chenoweth, Winifred	North Amherst.
Clifford, Catharine F.	Dorchester.
Connelly, Helen M.	Dorchester.
Cook, Mrs. J. O.	Amherst.
Courtney, Mary C.	Holyoke.
Coveney, John	Amherst.
Cowdre, G. Willis	Holyoke.
Cowing, W. A.	West Springfield.
Dana, Minnie L.	Easthampton.
Denghausen, Alfred F.	Boston.
Despres, Mary L.	Lawrence.
De Vito, Dominick	Roxbury.
Dowling, Edith M.	Holyoke.
Dowling, Kathryn	Holyoke.
Dunphy, Anne T.	Haydenville.
Everson, Bettina L.	Amherst.
Fairman, C. Bruce	Amherst.
Fairman, Myrtle B.	Greenfield.
Fay, Ula F.	Holyoke.
Fenton, Alice E.	Springfield.
Fletcher, Doris M.	Ashmont.
Foley, Gertrude A.	Brighton.
Forte, Frances	Amherst.
Frost, Eleanor	Natick.
Galanie, D. L.	Charlestown.
Gallagher, Frances I.	Holyoke.
Garvey, James J.	Amherst.
Gates, Anna B.	Pepperell.
Geiger, M. Emilie	Springfield.
Gere, Laura B.	Amherst.
Ginsburg, Eli	Shelburne Falls.
Glavin, John G.	Wilmington.
Goldberg, Louis N.	South Weymouth.
Hackett, Olive E.	Somerville.
Harris, Anne L.	Amherst.
Hays, Mrs. Frank A.	Chester.
Hebard, William E.	East Bridgewater.
Herrick, Edith L.	Amherst.
Hintze, Marjorie A.	Amherst.
Hintze, Roger F.	Northfield, Vt.
Howard, Martin S.	Whitman.
Joy, Leroy A.	Amherst.
Julian, Mrs. A. N.	Amherst.
Kelly, Leslie M.	Amherst.

Keyes, Dorothy I.	Amherst.
Kidger, Marion P.	Newtonville.
Knightly, Anna	Amherst.
Krol, Helen C.	Bondsville.
Lambert, John F.	Gleasondale.
Lavery, Elizabeth R.	Orient Heights.
Lawley, Evelyn G.	Florence.
Lawrence, Earline	South Hadley.
Ludwig, Hilda J.	Waverley.
Lynch, Mrs. Sarah M.	Easthampton.
Madden, Archie H.	Amherst.
Mahoney, W. F.	Millville.
Marean, Josephine	Dalton.
Marean, Mina	Dalton.
Marshall, Maud A.	Amherst.
Mart, Willis	Amherst.
Martin, Mrs. Bertha W.	Amherst.
Martin, Edward W.	Amherst.
Martin, Margaret A.	Amherst.
Martin, Ural V.	Amherst.
Mayo, W. I., Jr.	Florence.
McCarthy, Mary E.	Florence.
McDonnell, Anna H.	Florence.
McFall, Mrs. Marjorie C.	Amherst.
McGee, Joseph A.	Natick.
McGeoch, Charles R.	Amherst.
McGlenen, E. W., Jr.	Boston.
McQueston, Helen B.	Hadley.
Merrill, Susan T.	Northampton.
Miltimore, John E.	West Springfield.
Mitten, Elizabeth M.	Amherst.
Moore, Marion J.	Orange.
Moran, John	Amherst.
Morland, Harold L.	Islington.
Morse, Ellen H.	Amherst.
Moynihan, Cornelius G.	Belchertown.
Newcomb, Roxie A.	Deerfield.
Nolan, Katherine M.	Dorchester.
Nolan, Mary F.	Dorchester.
Norcross, Roy E.	Brimfield.
Novick, Leo A.	Amherst.
O'Brien, Mary A. I.	Dorchester.
O'Connor, Deborah	Chicopee.
O'Connor, Eileen	Chicopee.
O'Connor, Margaret A.	Northampton.
O'Donnell, Marguerite	Lawrence.
Oliver, Charles F., Jr.	Brockton.
Olympio, Alerico	Lome, Togoland, W. C.
	Africa.
Osmun, Kenneth L.	Amherst.
Pariseau, Wilfred	Amherst.
Pearson, Vera	Holyoke.
Pendleton, Mrs. H. L.	Amherst.
Pierpont, Mildred	Amherst.
Powers, Mrs. Edna M.	Amherst.
Prescott, Glenn C.	Florence.
Pullen, Josephine	Beverly.
Pulley, Marion G.	Amherst.
Pushee, George F.	North Amherst.
Quinlan, James E., Jr.	Amherst.
Ray, Isabella J.	Lexington.
Radio, Marian A.	Florence.
Richardson, Lewis E.	Millis.
Roberts, Mrs. Ruth G.	Amherst.
Robertson, Mrs. Helen C.	Lawrence.
Rudquist, Birger J.	Dorchester.
Ryan, Parker	Swampscott.
Searle, Jean N.	Amherst.
Shea, Walter	Springfield.
Smith, Helen R.	Brighton.
Spencer, Mrs. Nellie	Amherst.
Stanisiewski, Peter	Amherst.
Stasz, Amelia	Easthampton.
Steinhope, A. W.	Greenfield.
Stiles, Marjorie	Westfield.
Sullivan, Julia	Dorchester.
Sullivan, Margaret A.	Amherst.
Sullivan, Mary G.	Rosindale.
Sweetland, A. F.	Stoneham.
Tetreault, A. J.	New Bedford.
Thomas, Howard	Holyoke.
Thompson, Lulu B.	Amherst.
Thompson, Nellie L.	Amherst.
Tierney, Winnifred	Springfield.
Towne, Mary E.	Amherst.
Twomey, Katherine A.	Lawrence.
Walker, Eileen	Florence.
Walsh, Mrs. Elizabeth	Amherst.
Watts, Mrs. Edna K.	Amherst.
Weaver, Edward	Amherst.

Part II.

Weston, Evelyn E.	.	.	.	.	.	.	.	.	.	.	South Westport.
White, Lawrence H.	.	.	.	.	.	.	.	.	.	.	Amherst.
Wight, Elizabeth L.	.	.	.	.	.	.	.	.	.	.	Fiskdale.
Witt, Earl M.	.	.	.	.	.	.	.	.	.	.	Belchertown.
Wood, Celia M.	.	.	.	.	.	.	.	.	.	.	Springfield.
Wright, Ethel M.	.	.	.	.	.	.	.	.	.	.	Springfield.
Wright, Lela E.	.	.	.	.	.	.	.	.	.	.	Ludlow.
Yoffa, Eleanor	.	.	.	.	.	.	.	.	.	.	Gardner.

STUDENTS REGISTERED AFTER THE CATALOGUE FOR 1924-25 WAS PUBLISHED.

Vocational Poultry Course.

McLuskey, John	.	.	.	.	.	.	.	.	.	Holyoke.
Perkins, Harold Kent	.	.	.	.	.	.	.	.	.	Melrose Highlands.
Williams, Richard Harvey	.	.	.	.	.	.	.	.	.	Hudson.
Zunino, Ernest Joseph	.	.	.	.	.	.	.	.	.	Dorchester.

SUMMARY OF SHORT COURSE ENROLLMENT.

	Men.	Women.	Total.
Two-year Course, second year	75	9	84
Two-year Course, first year	93	12	105
Vocational Poultry Course	3	-	3
Winter School, 1925	76	10	86
Summer School, 1925	58	113	171
Totals	305	144	449

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Forestry	54	Animal Husbandry	34
French and Spanish	87	Dairying	35
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AGRICULTURAL COLLEGE: JAN., FEB., MARCH, MAY,
JUNE, SEPT., OCT., NOV. ENTERED AT THE POST
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THE SIXTY-THIRD ANNUAL REPORT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE

ISSUED IN ACCORDANCE WITH SECTION 8, CHAPTER 75, OF THE GENERAL LAWS

PART I.—THE REPORT OF THE PRESIDENT AND OTHER OFFICERS OF ADMINISTRATION FOR THE FISCAL YEAR ENDED NOV. 30, 1925



DEPARTMENT OF EDUCATION
THE COMMONWEALTH OF MASSACHUSETTS

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PAYSON SMITH, *Commissioner of Education.*

EDWARD M. LEWIS, *Acting President of Massachusetts Agricultural College.*

MASSACHUSETTS AGRICULTURAL COLLEGE.

PRESIDENT'S REPORT, 1925.

REVIEW OF THE YEAR.

In Memoriam.

HON. CHARLES A. GLEASON.

On September 29, 1925 our long time friend and co-worker, Mr. Charles A. Gleason, died suddenly at his home in North Brookfield. The news came as a great shock to all of us, I am sure, as well as to the great number of his fellow citizens who had learned to know the great qualities of his character both as a man and as a public servant. We shall all miss him. The loss of his superlative guidance and wisdom as the leader of the Board of Trustees will be felt for many years to come. The length and the quality of service rendered by him to the State and to the College are memorable and inspiring. They demand the grateful recognition of every citizen of Massachusetts.

Mr. Gleason was born on a farm at New Braintree, February 7, 1846. Here he continued to live for nearly half a century. He made it a model of progressive and profitable farming. He taught school when a young man, with the same progressiveness and thoroughness. His town very early recognized his great qualities of mind and heart, his energy, his wisdom, his uprightness, and elected him tax-collector when he was only twenty-one; he held the office fourteen years. For eighteen years or more he served on the school board; he was also town treasurer, assessor, selectman, and, as long as he lived in New Braintree, moderator of the town meetings. In 1873 he began his service in the State House of Representatives and was a member of the Committee on Banks and Banking. For three years he served in the Senate, and was a member of the committees on Banks and Banking, Education, Liquor Laws, Agriculture, and Public Health. For seven years Mr. Gleason was President of the New England Milk Producers' Association. His business interests caused him in the nineties to take up his residence in Worcester and later in Springfield where he remained for about twenty years. He returned to spend the last five years of his life in North Brookfield. Throughout his life he found time to be most active in the work of his church.

To the friends and alumni of the Massachusetts Agricultural College, however, it will be Mr. Gleason's remarkable service to the institution that will always stand out and remain as one of its most treasured heritages. He served as a trustee of the College for thirty-six years. As Chairman of the Finance Committee, Auditor of the College, and Vice-President of the Board of Trustees, he gave an amount and quality of service that will never be excelled. In every office he revealed himself as the conscientious, practical, tireless official, the just and generous man. His lifelong experience on the farm and in business and public affairs, made him ideally fitted to serve as trustee. His constant endeavor to support the great cause of agriculture and know the problem of education as it is today, to keep up with it, and to ascertain the solutions offered for it, were among the most noticeable characteristics of the man. He was in truth a loyal friend of the College and an exemplary citizen of the Commonwealth.

THE DEATH OF JAMES C. GREENOUGH.

James Carruthers Greenough, seventh president of the Massachusetts Agricultural College died at his home in Westfield, December 4, 1924. He was born at Wendell, August 15, 1829, and was a graduate of Williams College. He was

Principal of Rhode Island State Normal School for twelve years, 1871-1883, and became the President of the College, on the death of President Chadbourne. He resigned, however, in 1886, after only three years' service, and returned to his old duties as a normal school principal. He served for some years in this capacity in Westfield, but increasing physical infirmities finally made it impossible for him to continue active life though he lived on to the grand old age of ninety-five.

During his administration several new buildings were erected; great accessions were made to the library; the course of study was expanded and the Faculty greatly strengthened. Though his was a brief administration it was notable for its contribution to learning and scholarship.

New Appointments.

At the beginning of the college year in September, Wallace F. Powers joined the staff as Professor and Head of the Department of Physics, succeeding the late Philip B. Hasbrouck. Dr. Powers graduated from Clark College in 1910, and received his doctorate from the same institution in 1914. He comes to us highly recommended after four years of successful teaching in Wesleyan University as Assistant Professor of Physics.

Cavalry Barn.

Early in the evening of September 3rd the Cavalry Barn was destroyed by fire. An investigation by local and state authorities resulted in no definite conclusion as to the cause of the fire. The premises were under constant guard of a soldier of the regular army and the fire originated while the stable was thus guarded. The horses were fortunately removed from the stable and much of the movable equipment. All of the forage, however, and considerable cavalry equipment were destroyed. The estimated value of the forage was \$1,583 and of other army stores \$4,698. The building was the property of the State; the forage and equipment were owned by the Federal Government.

Application was immediately made to the Governor for an appropriation from the emergency fund to replace the stable; on October 14th an appropriation of \$16,500 was granted. The stable facilities are being reconstructed in three fire-proof units, consisting of the main stable for the shelter of animals, a separate building for the storage of forage, and a third building to be used as a blacksmith shop. The stable will probably be ready for occupancy early in January.

New Construction.

Practically no new construction was provided by legislative appropriation of 1925. Under such appropriations as were made \$1,000 has been expended for the extension along the easterly side of Olmsted Road of the concrete walk begun in 1924; \$3,000 was expended in fencing the fruit plantations and \$4,000 was expended in the replacement of livestock.

Commencement 1925.

At the annual commencement in June diplomas were awarded to 74 men and 4 women. The degree of Master of Science was conferred on 2 men and 1 woman.

The commencement address was delivered by Dr. Edwin W. Allen, of the United States Department of Agriculture, a graduate of the College in the Class of 1885. For the first time in fifteen years the College was honored by the presence of the Governor of the Commonwealth, Hon. Alvan T. Fuller, who delivered a timely and appropriate address.

Enrollment.

The enrollment of four-year students this autumn is 516, representing an increase of approximately 5% over the enrollment of 490 in the autumn of 1924. The number entering the Freshman class is this year 179 as compared with 184 of a year ago. The number of men in the Freshmen class shows a decrease of 13 and the number of women increased by 8. An analysis of the number of women

entering each Freshman class of the past 8 years together with the corresponding percentage of the total enrollment is as follows:

	No.	Per Cent.
1918	4	3.4
1919	9	7.2
1920	11	8.1
1921	15	9.3
1922	20	10.7
1923	13	10.4
1924	31	16.8
1925	39	21.8

In the two-year course, 105 were admitted this year as compared with 94 admitted in 1924. The total enrollment of the two-year course is 192, an increase of 20% over the enrollment of 1924.

Tuition.

During the legislative session of 1925 the question was raised as to the desirability of establishing a tuition charge for residents of Massachusetts enrolled at the Massachusetts Agricultural College. During the past months this problem has been still further urged upon us by responsible members of the Legislature and during the session of 1926 consideration of this problem is quite likely to take more definite form than previously.

In view of this possibility the following facts should be before you. When the College first opened in 1867, a tuition charge of \$36 per year was established. In 1870 this tuition was increased to \$54 per year. In 1873 it was increased to \$75 per year. From 1879 to 1883 the tuition was reduced to \$36 per year and in 1884 a tuition charge of \$80 was established by the Trustees. This was continued till 1899. While, for over thirty years the catalogue announced a tuition charge for residents of the State, nevertheless, free scholarships were granted from the outset and a fair proportion of the needy students were able to attend the institution without the payment of tuition. Free scholarships were also offered by the Massachusetts Society for the Promotion of Agriculture and by the various agricultural societies of the State. In 1878 the Trustees by vote established one free scholarship for each of the eleven congressional districts of the State. In 1883 the Legislature increased the opportunity for free tuition by appropriating money to the College to cover eighty free scholarships. These scholarships, together with those already established, by the Trustees, provided free tuition to practically every student.

From 1884 to 1898 inclusive the catalogue of the College included the following announcement:

"Students whose homes are within the State of Massachusetts can in most cases obtain a scholarship by applying to the Senator of the districts in which they live."

In the catalogue for 1902 and for several subsequent years, there appears the following statement:

"Tuition is free to citizens of the United States. Citizens of Massachusetts, however, in accordance with an act of the Legislature, must make application to the Senator of the district in which they live for a free scholarship that covers the charge for tuition. Blank forms for such application may be obtained from the president of the college."

In 1905 the Legislature increased the number of free scholarships from 80 to 120 and made a specific appropriation to provide these free scholarships.

Thus it appears that while tuition has been charged it has been the intent of the Legislature that tuition should be fairly free at the Massachusetts Agricultural College.

An analysis of the practice of other State Agricultural Colleges reveals the fact that at the present time 32 charge no direct tuition to residents of the State. Of the 11 which do charge a specific tuition fee, at least three construe the tuition fee to be a general incidental fee. In three additional states there is an arrangement

whereby indigent students may be relieved from paying the tuition fee as advertised. On the other hand it should be said that a tuition charge is now being considered at other state institutions here and there. Some of our neighbors have adopted the policy of such a charge. The University of Vermont, a semi-private institution, charges \$200; New Hampshire \$75, plus \$54.50 for incidentals; Maine, \$125 and New Jersey \$200. Each of these, however, provides a free scholarship arrangement for needy students. The practice of the majority of other institutions, however, furnishes no argument for Massachusetts to impose a tuition fee on the ground that such a charge is generally made elsewhere. However, it is conceded that the Legislature may fairly raise at any time the question of the extent to which this state shall bear the cost of higher education.

Presumably this issue is now raised because of the possibility which it affords for increasing the revenue of the state; the question of whether tuition is to be charged, should find its answer in part in the consideration of the amount of revenue which is to be obtained thereby. I am of the opinion that probably a moderate fee will impose no undue hardship upon many of the students entering the college; but if this is to be done I believe that at the same time there should be a liberal system of scholarships established to meet the needs of that group of students who are likely to continue to apply for admission, and for whom there is no opportunity for a college education of our type, except at an institution where tuition is free. The alternative is a flat charge upon every student placed so low that it will not prove a serious hardship to the worthy student who needs and desires our kind of training.

Scope of the College.

A question of first importance facing the Board is the one connected with the scope of the College. You will remember that President Butterfield raised this question squarely in his last report by recommending expansion along three definite lines. On account of his departure and the urgent necessity of dealing with the problem of State House relationship the consideration of this important question has been delayed. The time has now arrived when a start should be made towards a decision. Necessarily a final and satisfactory one must be based upon careful study and discussion, and though I hope it may be taken up without hurry it ought to be pressed to a decision without undue delay. I therefore recommend that a committee be appointed at once to study and consider this fundamental and far-reaching question.

Infirmary.

The activities of the College Infirmary center in the care of students who suffer from illness and require attention. A recital of what the Infirmary has done during the period from September 1, 1924 to September 1, 1925 will be of interest.

There have been eighty-five house-patients treated for various lengths of time, amounting in all to four hundred and thirty hospital days. Besides, three hundred and fifty out-patients, making a total of five hundred visits, received first-aid assistance and other minor treatment.

The important diseases were:

Appendicitis	6 cases
Bronchitis	2 cases
Colds	4 cases
Exhaustion	2 cases
German measles	1 case
Heart disease	2 cases
Indigestion	3 cases
Infections	9 cases
Influenza	20 cases
Mumps	1 case
Pink eye	1 case
Poison ivy poisoning	1 case
Scarlet fever	1 case
Tonsillitis	15 cases
Miscellaneous (mainly of a minor or surgical nature)	18 cases

The communicable diseases are always of especial interest in an institution of this kind. Students, free to come and go, may contract communicable disorders readily. Our institution may consider itself fortunate during the past year in this respect as will be indicated in the list just cited.

The students as a whole are vigorous and sound and not easily subject to ailments. Out-door physical exercise, physical education, and military instruction contribute to this condition.

Much credit is due our resident nurse, Miss Christopher, and our matron, Mrs. McCrae.

Market-Garden Field Station.

On January 27, 1925 the personal force of the Market Garden Field Station moved from the farmhouse, (temporary headquarters) to the newly completed administration building at 240 Beaver Street. (Removal from North Lexington to Warren Estate, Waltham, September 15, 1924). The staff then consisted of Ray M. Koon, Extension Specialist in Vegetable Gardening, in charge; Paul W. Dempsey, Field Superintendent; W. L. Doran, Assistant Research Professor of Botany; V. A. Tiedjens, Assistant Research Professor in Vegetable Gardening; and Edith E. Meehan, Office Manager. On April 15, W. L. Doran was transferred to Amherst and was succeeded by Dr. E. F. Guba on April 24.

On September 1, Professor W. D. Whitcomb, who joined the staff July 1st on a half-time basis, assumed his duties as full time Field Station Entomologist. He has been engaged in developing a more effective control for Red Spider. The results are encouraging.

Dr. Guba has made a notable advance in vegetable disease control, particularly by means of the vaporization of sulfur in greenhouses. He has rendered a report on the application of Holland's Bordeaux and prepared two papers and ten news articles for publication. In addition he has made 250 personal extension contacts.

Professor Tiedjens has progressed steadily with his study of the vegetative propagation of asparagus and the improvement of certain strains of vegetables. His endeavor to develop a better type of greenhouse lettuce has not yet given the desired results.

Professor Koon has administered the affairs of the Market Garden Field Station. His weekly trips to Amherst have maintained an essential bond between the sub-station and the college. In addition to this he has served in the capacity of Extension Specialist in Vegetable Gardening. His major extension project is the Grading and Standardization of Vegetables. The Extension Specialist and the station staff edit a monthly publication, the Market Garden Field Station Journal, which reaches 1900 vegetable growers. The Annual Field Day meeting at Waltham was attended by nearly one thousand persons interested in the vegetable growing industry.

Administrative Relationships.

When in June 1924 you asked me to assume the duties of the chief executive of the College, it was with the definite understanding that we were to try to clarify the administrative situation that had resulted in the resignation of President Butterfield. Since 1916 he had been trying to administer his office in the face of new legislation affecting more or less all state institutions and departments. Despite these laws: the control over the state institutions by the Supervisor of Administration (1916), the new relationship established with the Department of Education (1919), and the later control of the Commission on Administration and Finance (1922), he contended and insisted that he was primarily, if not solely, responsible to the Board of Trustees. He knew, moreover, that the legislators who had written the Consolidation Law (1919), which "placed" the Trustees in the Department of Education, had stated definitely that the powers of the Trustees and the control of the College by them would not be impaired in any important particular by the new arrangement. The laws establishing the Trustees as a governing body were still on the statute books and he maintained to the end that until they were repealed they were in force.

Nevertheless, it soon became quite evident to him that the latest legislation (1922) governing printing, personnel and purchasing through the Commission on Administration and Finance did after all seriously affect the powers of the Trustees.

Final decisions on these matters were not with him nor with the Trustees but with officials in the Commission on Administration and Finance whom, he knew, could not possibly understand the full significance of many of the matters placed before them for adjudication. He later learned that both by action and by speech, they considered the Commissioner of Education as under the law actually "in charge of the College." He saw the former powers of the Trustees and of himself reduced to uncertain and hesitant recommendations. Necessarily, administration became increasingly difficult and trying to him under the new régime, and efficient administration, he felt, was not possible under it. He protested vigorously and often against what he called "the system," and finally, finding conditions unbearable, he resigned.

In his last report to your Board he said: "We are not, however, reconciled to the essential unsoundness of the present scheme of centralized control of expenditures." "I do not like to continue to protest against the present methods, as I have done every year since the system was established." "I cannot exaggerate its seriousness. I assure you that many of us who come into closest contact with these administrative relationships have reached nearly the limit of our endurance." "The essence of the reform we desire is that you as a Board of Trustees shall have your power of control of the College restored to you, that it shall be specifically recognized that neither the Commissioner of Education nor the Commission on Administration and Finance shall have more than advisory and recommendatory powers." "We believe that the Trustees should have full power to decide the scope of our work; the type of expenditures that are justifiable; to employ members of the staff and to fix their salaries. We believe that this power should be final and not subject to veto on the part of any of the other State officials. There is no question but all these powers should be held by the Trustees subject to legislative authority and to such checks, accounting, and reviews as may be demanded by sound public policy."

The Alumni aroused by the loss of the President and by the difficulties which had caused his resignation, passed unanimously the following resolution at the annual meeting of the Association at Commencement:

"Whereas: We the Alumni of the Massachusetts Agricultural College believe that, in order to maintain our college as a first-class educational institution of collegiate grade; to administer the college efficiently and with true economy; to keep high morale among the teaching staff, the Trustees of the College should be given authority to exercise full and absolute administrative responsibility of the college; decide upon expenditure of legislative appropriations; employ members of the staff and fix their salaries; determine educational policies, — perform in fact all the functions of a responsible governing board; therefore, be it

"Resolved, That a committee known as the Committee on Administration of the Associate Alumni be appointed to draft and introduce into the next session of the legislature such a bill as will secure such changes in existing laws as may be necessary to secure to the Trustees the authority above mentioned."

In the following August a representative meeting of the farmers' organizations of the State met in Worcester to consider the situation. There was much publicity in the press. The editorial comment was distinctly favorable to a larger freedom of control by the Trustees. There was also a great deal of agitation for legislation. Throughout this critical period your Board continued patiently to hope that the situation would be eased in time, without drastic action. Soon afterward, therefore, you again deliberately adopted a policy of patience and waiting, believing that possibly a new Executive and a new Chairman of the Commission on Administration and Finance might work out agreements and undertakings that would greatly relieve, if not completely solve, some of the more troublesome administrative difficulties. You were agreed, however, that if this policy did not succeed, then a solution by legislation would have to be sought.

Though I was from the beginning firmly of the belief, as you know, that legislation was necessary and inevitable, I gladly acquiesced in your judgment and during the past year I have faithfully tried to carry out your will. I think I have been patient and, if I may say it, long suffering. I have tried to see these problems from the other side as well as from ours. I have been treated with the utmost

courtesy and good will by all concerned. I think I have been taught, too, to appreciate the difficulties that other state agencies have to meet in carrying out their purposes. Nevertheless I must report to you that the sum total of accomplishment is entirely negligible, and I am more than ever convinced that separate agreements of any permanent significance, cannot be arranged under present conditions. The great obstacle is the fear of precedent, or of opening the way for similar requests from other institutions. It is probably just as well. Arrangements and understandings are at best mere palliatives. They settle nothing permanently. Had I been able to perfect the most satisfactory of agreements, the law of consolidation, nevertheless, would still continue to stand above you ready to challenge your control of the institution at any time, and you would have to continue to face the inevitable changes in the personnel of the administrative offices at the State House. A great institution like ours should have its control firmly planted upon as sure and safe and as permanent a basis as possible.

By this time I have had sufficient opportunity to know at first hand the many duties and responsibilities of the executive office. Has it been a satisfying experience? Has there been possible a man's pride in the work? I wish I were able to say that there has been. I am told that there may be very real and profound satisfaction in such leadership despite the multiplicity of detail and problem necessarily inherent in so intricate and varied an organization. But when these duties have to be performed under conditions of constant uncertainty; uncertainty of authority, uncertainty of salary adjustments, uncertainty of salary increases, uncertainty of the employment of necessary services, uncertainty of adequate printing (so important an item in an institution of our type), uncertainty of delivery of printing and of goods, uncertainty as to what may be printed and what may not be printed, uncertainty as to our own ability to fulfill important obligations, to confer with Federal colleagues, and a mass of other uncertainties of a similar nature, how can there be any satisfaction except the one of having done one's best in an impossible situation? Furthermore, when one sees this constant state of uncertainty result in deteriorating morale among his most earnest and conscientious subordinates how can there be any pleasure whatever in the labors of such an executive? Under the most favorable conditions the task of administering an institution of as varied character as ours would demand all of the executive's thought and the maximum of his time and resources. But when it has to be done under the conditions which now obtain, is there any possibility whatever of doing the task well?

It is needless for me to say that I wish this sort of thing should not have to be said. Those of you who know my disposition know that there is no pleasure in it for me. But when the welfare of a great institution is at stake and a crisis in its administration has been reached, one's personal pleasure is not to be considered. The time has then come for plain speaking and action.

The fundamental defect, or evil, in the present situation centers in the minute and exacting control by the Commission on Administration and Finance one hundred miles away. The condition of uncertainty just referred to is due solely to the lack of authority by those who are close to the job, and therefore by those who know. Practically everything has to be referred to the Commission. It has the power to set aside the carefully worked out recommendations of responsible men like the Director of the Experiment Station, the Director of Extension, and the President of the College.

If this sort of thing is to continue indefinitely, I frankly cannot see what functions the Trustees have to perform excepting purely advisory functions. Under such circumstances I do not see how your interest can possibly be long maintained. Nor do I see the need of the Presidency at all as ordinarily conceived. A deputy or agent, responsible directly to the Commissioner would serve as well. If the Supervisor of Administration was right when he said that the Head of the Department of Education is actually "in charge of the Massachusetts Agricultural College" let it be so understood and publicly admitted. If the Head of the Department is the only officer with whom the Commissioner will "confer and advise about the affairs of the College," let us all so understand it. Let us stop playing at the game as though the responsibility was solely ours. Let it be frankly and openly proclaimed that the President is directly responsible to the State House and that the Trustees are a purely advisory body, and let the law so express it. That would

be a perfectly logical and consistent result both of present practice of the Commission on Administration and Finance and of the expressed statement of policy. In this way unnecessary links in the chain of administration would be eliminated, the whole machinery simplified, and money saved to the State. Since this is the logical consequence of present tendencies, in any event, why not face the fact squarely. The issue is before us again, gentlemen, and it is the old and persistent issue: "Shall the Trustees have sufficient power to manage the institution effectively or shall this power be exercised by other and distant agencies?"

Let us remind you that the control of the institution for over fifty years resided in an independent governing board of Trustees responsible to the Legislature. The competency and efficiency of your kind of control has been proved. I believe that it should be continued. The Massachusetts Agricultural College is a great dynamic public service institution; it deals with the great fundamental and basic industry; it serves a wide and far-reaching constituency, upon the efficiency and prosperity of which depends the welfare of the whole State including its industries, and it has entrusted to its care a type of youth second to none in the Commonwealth. I believe that the best interests of a great institution like this are best served when it is governed at all vital points by a group of unselfish and public spirited citizens like yourselves, who by constant and intimate contact with its many problems and purposes can best understand and therefore best direct its policies and control its destinies.

Let it be clearly understood that there is implied in this contention no objection to the budget method of controlling state finances. The budget idea is sound in principle and theory: it is the only business way of handling appropriations. It is an infinite improvement over the old hit and miss method of appropriating funds, and it has come to stay. But a budget system may be good or bad and a good system may easily be perverted. As I understand it a sound budget arrangement aims to check waste and extravagance and to save money primarily at the point of appropriation, not at the point of expenditure. Our present system controls at both points; moreover, it controls expenditures in the most minute and rigid manner. After a budget has been scrutinized and approved by the budget commissioner, the ways and means committee, and the legislature, its grants of money should not be tied up by a machinery of control that allows no latitude or freedom in expending them, so long as the total does not exceed the total of appropriations. No executive can object to a budget control that says in substance: you may have so much money for this purpose, and no more, you may have so much and no more for that. But serious objection can be raised against a budget control that says you can only pay this much and no more under any circumstances for this specific service; you can only pay for this item so much and only so much. That kind of control should be questioned and it should be questioned not only because it injures the efficiency of administration, but because it jeopardizes the whole budget scheme. The best budget plan may not be able to stand that kind of strain. In that respect, a careful study leads me to say that Massachusetts has gone farther than any other state in the union.

During this year of administration I must frankly state that I have seen my judgments and recommendations as an executive, over-ruled or set aside. I have seen important printing arrive too late either for effective use or for any use at all. I have seen requests for salary adjustments of a delicate and urgent nature questioned and refused. I have seen travel requests of an important and obligatory character rejected. I have had to travel to Boston in order to explain and urge minor matters that could not be understood, and that ought not to have encroached upon my time. I have seen prospective candidates for important positions hesitate, and even refuse, to join the service of the State primarily because of the existing machinery of far away control. I must confess further that I have seldom if ever been made to feel that I was a desirable and helpful public servant rendering a necessary and effective service to the citizenship of the Commonwealth.

Such a situation, I am sure you will say, is intolerable. It is intolerable — judged by any standards of conscientious and responsible administration. It, therefore, ought to be ended. I do not blame the men who are in charge of this control — not in the least. They have always been courteous and frank. The trouble lies in

the fact that they are tied up by rigid rules and regulations and are trying to administer a scheme based upon a fundamentally wrong principle. The control of the expert by the inexpert has never worked and it never will. What they are trying to do is something that no group of men can possibly do satisfactorily anywhere. You cannot control any efficient organization, much less a sensitive organization of trained educators, by a card system one hundred miles away, and get results. You cannot control the man who knows by the man who does not know and expect efficient administration and good service. It cannot happen. And it cannot happen because the principle is wrong through and through and the theory unsound. I believe therefore, that it is our bounden duty to press immediately for relief and I see no way to do it effectively except by appropriate and definite legislation. On this account, therefore, I believe that the Alumni and friends of the College are completely justified in joining with you in pressing for such legislation as will restore to you power sufficient to permit you to continue to exercise responsible authority over the College and I have faith to believe that the people of the State and their representatives will agree with me.

EDWARD MORGAN LEWIS,
Acting President.

LEGISLATIVE BUDGET FOR 1926.

Projects for Permanent Improvement.

1. MEN'S DORMITORY, \$150,000.

For many years the Trustees have had before them the problem of providing dormitory facilities for a portion of the men students attending the College. The demand for a dormitory has become more urgent yearly. For several years the request for a dormitory was included in the budget. In more recent years other projects have appeared more pressing and the item for a dormitory has been omitted. The Trustees are again presenting as the project which in their judgment is most needed this year, an item for \$150,000 for a Men's Dormitory. This will be located south of South College on an existing steam main and adjacent to other service lines. It is proposed to use this dormitory chiefly for freshmen. With proper supervision the housing of freshmen on the campus will undoubtedly be to the scholastic advantage of these boys. The dormitory will accommodate approximately 100 students; by charging a rental somewhat less than that charged in private houses off the campus, it is estimated that a return of from 2% to 3% can be made to the State on this investment.

2. HORTICULTURAL MANUFACTURES BUILDING, \$60,000.

The importance of utilizing various by-products of the farm which formerly were wasted, such as fruit and vegetables, was emphasized during the war, and under the direction of Prof. W. W. Chenoweth of this institution farmers came to see whereby this saving could to advantage be made permanent. In order to give adequate instruction in the preservation of fruit and vegetable products, a new laboratory building is essential. The plans provide for a one-story building of inexpensive construction, which will furnish laboratories for the various phases of this work.

The pressing need for this building is now generally understood. However, some of the principal considerations may be recapitulated as follows:

(a) The department of horticultural manufactures now has its work widely distributed in four buildings, viz, Flint Laboratory, Wilder Hall, French Hall and a workshop on the hill near the cold storage plant. This wide scattering of the work is obviously very detrimental to its objective.

(b) The principal teaching is done at Flint Laboratory in rooms which were designed for use by the dairy department. The dairy department needs these rooms and would like to see the department of horticultural manufactures cared for elsewhere as soon as possible.

(c) The present quarters are entirely inadequate for the teaching work. On account of the limited space the department has been compelled to refuse admission to numbers of students. This is perhaps the only department in the institution which has been compelled frequently to refuse admission to students on account of lack of space. All the teaching could be much better organized and more efficiently conducted in a new building designed for this particular work.

(d) It is highly desirable that vigorous research work be undertaken at the earliest opportunity in the field of fruit and vegetable preservation and the manufacture of by-products. A strong demand exists for this work among fruit growers, but the subject is equally important to all consumers of food in Massachusetts.

(e) The department is now carrying on important extension work, but these extension projects need to be strongly supported by effective work at the college, and especially by well-directed research work.

(f) The Massachusetts Fruit Growers' Exchange Association, the Boston Market Gardeners' Association and other organizations have urgently requested this proposed building. This demand from the fruit growers and vegetable growers should be squarely met.

3. ADDITIONAL LAND FOR CRANBERRY STATION AT EAST WAREHAM, \$1,000.

The total area of land, the purchase of which is contemplated by this item, is sixteen acres in the larger parcel; one acre, forty rods, in the smaller. The latter area is needed for the purpose of straightening the present boundary and preventing possible undesirable neighbors. The former area is required for three purposes, namely:

As source of sand for sanding the bogs.

Turf for building dams, dikes and embankments.

An area of some eight acres, a part for enlargement of the blueberry plantation's work, another part for testing new varieties of cranberries, and engaging ultimately in formal breeding work.

4. ROADS AND WALKS, \$11,000.

In order to provide improved roads for the main thoroughfares of the campus and to institute permanent walks it is proposed to build small sections of each from year to year. In 1926 it is desired to extend the macadam road started in 1923, a distance of 1,800 feet, from the Library Building to the Power Plant. This section carries the heaviest traffic which comes to the campus and the present dirt road is entirely inadequate, especially during the seasons of frost and of heavy rains.

The estimate of \$10,000 is for a 5 inch crushed rock foundation with a 3 inch bituminous bound surface. It is also proposed to build a cement walk from South College to the Drill Hall, a distance of approximately 600 feet, costing \$1,000.

5. WOMEN'S GYMNASIUM AND EQUIPMENT, \$16,450.

With the increased number of women students attending the College, the need of a women's gymnasium becomes imperative. With the appropriation here requested it is proposed to erect a wooden frame building adjacent to the present Women's Dormitory. Placed in this location it will be unnecessary to duplicate dressing rooms and shower baths. The amount requested will provide for the necessary equipment for the building.

6. LIVING QUARTERS FOR FOREMAN AT TILLSON FARM, \$6,000.

Recently the barn cellar on the Tillson Farm was converted into an incubator cellar by repairing the walls and constructing a suitable roof. These repairs, however, have been partial and it is now proposed to raise the roof in order to provide a two-story building. The upper floor will furnish living quarters for the foreman and the main floor will be used as an experimental laboratory, egg room, operating room, office and shop. These improvements have already been delayed beyond the point of economy in operation.

7. GRADING AREA SOUTH OF ATHLETIC FIELD FOR TENNIS COURTS, \$10,500.

In order to amplify the present inadequate facilities for outdoor games it is proposed to construct 10 tennis courts on the area immediately south of the present enclosed Athletic Field. The grading contemplated is on the basis of the permanent future development of the enclosed area. The expense for grading, surfacing, fencing, etc., is \$10,500.

8. REPAIRS TO PHYSICS BUILDING, \$4,000.

The building now occupied by the Department of Physics is of frame construction and was one of the original buildings to be erected on the campus until the College opened in 1867. Very little money has been put into this building during the past ten years. The building needs a general overhauling, certain parts of the construction strengthened and various new fixtures installed. The appropriation of \$4,000 will in the opinion of the Superintendent of Buildings meet the needs for putting the building in good repair for several years' use.

9. NEW STEAM LINE, EAST EXPERIMENT STATION TO MICROBIOLOGY BUILDING, \$4,775.

This project contemplates replacing a section of underground pipe line which is now in poor condition. The new line would be 385 feet shorter than the present one, thus effecting greater economy in operation.

10. PRACTICE HOUSE — HOME ECONOMICS, \$21,000.

A farmhouse for practice work and demonstration purposes is considered an essential in the development of the resident instruction in Home-Making. This house should be arranged for a moderate sized family, living on a modest income. The project here submitted contemplates utilizing a farmhouse belonging to the College and located close by the Women's Dormitory. In many respects the house is now in poor repair and considerable money should be spent on it whether or not it is used for this purpose. The project also contemplates fitting up a shed now attached to the house for the purpose of providing facilities for an instruction room in Clothing. The project also provides for erecting a cottage for the farmer now occupying this house.

11. GYMNASIUM, \$150,000.

A gymnasium has for many years been considered as one of the most pressing needs of the institution. The present so-called Drill Hall offers no facilities whatever for gymnastic work or for other organized forms of physical education. The building is unsuitable even for the practice of basketball, which is the only use to which the building is now put. The locker rooms and toilets adjoining the Drill Hall floor are extremely unsanitary and any improvement in their condition is practically impossible. It is proposed, therefore, with the appropriation here requested, to begin construction on a new building for physical education purposes. This appropriation will provide the basement of the complete Physical Education Building — this basement to include large locker room for the accommodation of recreational classes as a dressing room with locker for each man; several small rooms without lockers as dressing rooms for different teams or groups; a drying room where exercise equipment may be thoroughly dried between the times of practice; shower rooms and toilets sufficient to accommodate all those using the building; swimming pool, and filtration plant. This basement to be covered with a temporary roof until such time as the remainder of the building may be constructed.

REPORT OF THE DEAN.

During the year just ended the work of the Dean's and Registrar's offices was administered by the same Acting Head. This meant a very heavy year. It also called for a rather careful study of the duties of the two offices to determine the most effective plan of organization along permanent lines. A close coördination of the

work of these two offices, which is in many respects very similar, will result in more effective administration at a considerable saving in time and money. The experience of the year will be of great value in reorganizing the two offices when the opportune time comes.

The problem of absences, more or less of a nightmare, in the life of any Dean, has never been less vexing since I have been connected with the office. The no-absence regulations for Freshmen and Sophomores appears to develop habits of regular attendance and punctuality in explaining necessary absences. These habits together with the natural interest the student has in the work of his elective courses seem sufficient to carry him during the last two years. It is now only the rare exceptional offender which the Dean is required to handle personally. The plan of daily absence reports for all classes has been put into effect this year.

The advisory group for Freshmen was made up of the following members of the staff whose unselfish and telling work was much appreciated:

Raymond Halliday.
B. F. Jackson.
A. N. Julian.
M. O. Lanphear.
Wm. L. Machmer.

C. A. Peters.
F. P. Rand.
Paul Serex.
Miss Helen Knowlton.
Miss Edna L. Skinner.

Some progress was made in taking care of those students barred from the regular military and physical education courses on account of physical disability. These students were given a special examination by a competent physician who prescribed the kind and amount of exercise suitable for each individual. The student was then asked to follow directions and report at regular intervals to the Director of Physical Education. Only the lack of suitable equipment prevented us from making this work of maximum effectiveness.

Fifty-seven members of last year's Freshman class failed to continue their work as Sophomores this September. Of this number thirteen are still in college as members of this year's Freshman class. Twenty-one left either for financial reasons or because they wanted to go to work and saw no special reason for making the sacrifice of time and money. Ten transferred to other institutions, two are in the two-year course here, and eleven were distinct failures scholastically. These statistics give some idea of the character and variety of problems which the Dean's office is required to handle constantly; they also show that scholastic difficulties alone do not account for the rather high mortality of the first year students.

The spirit of the student body has been excellent. Through strong leadership and the willingness on the part of the representatives of the student body to assist the administration, the program of the Freshman-Sophomore encounters at the beginning of the fall term was curtailed very materially. It would be exceedingly hard to find anywhere a more generally contented student body and one more willing to sacrifice apparent personal advantage for the good of the group.

Naturally we still have problems. Among these are:

- (a) A general reconstruction of the curriculum so as
 1. To reduce the number of required hours the student must carry per term.
 2. To bring about a closer coördination of courses.
 3. To eliminate some courses with small enrollments.
- (b) The raising of the standard of scholarship — a problem as old as the college itself.
- (c) The proper housing of our student body. The proposed new dormitories, when allowed by the legislature, will help very materially in solving this problem.
- (d) A more effective advisory scheme. There is at present too much difference between the requirements and administration practices of the major advisers.

Viewing the work of the year as a whole one would call it good. Its weak places will be strengthened and its successes give us the greatest encouragement in carrying on.

WM. L. MACHMER,
Acting Dean.

REPORT OF THE DIRECTOR OF THE EXTENSION SERVICE.

Agriculture and rural life in Massachusetts continue in rapid transition. Manufacturing industry competes with agriculture for man-power. Hired farm laborers and owners of poorer farms have found employment in town more attractive. Markets pay more for quality products than ten years ago, and often pay less for poor products than ten years ago. Those farms which cannot produce a quality product are being crowded out of production. We are developing a more highly specialized agriculture with larger capital investment per unit.

These changes bring greater demand for service from extension forces. County agents cannot go to original sources for up-to-date materials; the specialists find it necessary to take more time than formerly to prepare the latest results of research in usable teaching form. Leaders in farm organizations look to the College for interpretation of changes and trends in agriculture. In meeting these calls the Experiment Station staff and resident teachers have given generous and valuable coöperation.

Improved highways have enabled many city workers to live in the country. The material comforts of city life are penetrating the country, and increasing the willingness of intelligent and progressive people to remain in country homes. We receive many calls for help in planning small farm businesses which are to be carried during spare time as secondary sources of income.

One of the greatest services of extension work is to meet emergencies. In our judgment, however, it is more important to prevent emergencies, if possible, than to meet them, and this is best accomplished by widespread teaching of the preventive methods. Such teaching is to a degree prosaic, tedious, and certainly non-spectacular. It is, after all, the most important part of our work. This we believe we have accomplished during the year just closed in greater measure than ever before.

The year has been notable for the continuity of staff service, with a record of but three resignations. Miss Mildred L. Wood, Specialist in Nutrition, Mr. John A. Crawford, Editor, and Mr. John B. Abbott, Specialist in Agronomy, resigned during the year. Miss Wood is succeeded by Miss May E. Foley, and Mr. Abbott by Mr. John P. Helyar. Mr. Robert D. Hawley has taken over the work of the editor, and Mr. Earle S. Carpenter has been appointed to assist Mr. Hawley in work on exhibits and extension courses. Work has been interrupted much less than in any recent year. We have been fortunate in having few changes in clerical staff. The county staffs have also had few changes. New agricultural agents have been appointed in Berkshire, Essex, and Norfolk; new home demonstration agents in Barnstable and Essex, and a new club agent in Berkshire.

Before Mr. Crawford left the position of Extension Editor, a great deal of educational material was furnished to the daily and weekly press and other publications. This work has lagged seriously since Mr. Crawford's departure. Publication of our basic literature has continued, but has not kept pace with either the demand or the plans made for it. Farm and Home Week in 1925 offered the most effective program ever presented. Correspondence courses have lagged because of insufficient personnel and the difficulties of insuring adequate teaching facilities. It is much to be hoped that by re-arrangement proper support can be given to our courses within the next few weeks. Radio courses are a new development. The opportunity is almost beyond imagination. The Extension Service is coöperating with Station WTAG in Worcester and Station WBZ in Springfield. We look for greater rather than less work of this kind. Returns on the poultry course broadcasted from WBZ this last spring were most appreciative. The supervisory members of the staff have kept in touch with the Boards of Trustees for County Aid to Agriculture, and report more active and effective interest on the part of these Boards. All told, the year has been devoid of spectacular features, but has marked excellent progress in systematic teaching.

Extension work is promotion of sound growth and development; we cannot expect the achievement of full growth in a single year. The extension projects as built up through years of study and analysis have undergone no great change in 1925. We have continued to work with commodity associations, and have found

excellent co-operation from them. Among these commodity associations are the Massachusetts Association of Certified Poultry Breeders, the local and county poultry associations, the Massachusetts Fruit Growers' Association, the Boston Market Gardeners' Association, the Cape Cod Asparagus Growers, the Association of Co-operative Dairies, and others.

The combined animal husbandry-agronomy-farm management project, dealing with the dairy industry, has continued effectively through the year. Probably the greatest progress has been made in the forage crops phase of the program. Some gains have been made in feeding practices. A revived interest in cow test associations is evident and in their modified form these associations are more effective than ever.

The poultry project has seen the satisfactory establishment of a Massachusetts Association of Certified Poultry Breeders, and general progress in educating the rank and file of poultrymen in better sanitation. Much special work was done during the epidemic of fowl plague, which happily made little appearance in Massachusetts, but was a real menace on the North Atlantic seaboard. By arrangement with the Veterinary Laboratory, a great amount of diagnostic work was done which assisted materially in keeping the poultry industry safe.

During the year producers of milk have been encouraged. With the recovery of milk prices has come optimism, and the despair of a year ago has quite disappeared. Many more dairymen are interested in better feeding and management than a year ago.

Quality product is the goal toward which all efforts are being bent in our pomology work. It is useless to discuss re-capturing our own markets from western fruit until we have a sufficient quantity and quality of fruit with which to hold these markets. The year has shown improvement.

The Boston Market Gardeners' Association has co-operated with the Market Garden Field Station in Waltham in establishing standards for vegetables. These standards are being observed by leading growers. It is too early to judge the effects in the market. This industry, quite as much as any, needs the most painstaking reduction of producing costs, the only basis of profit under present competition.

The specialist in horticultural manufactures has met more demand than ever for work in farm storage; particularly in developing plans by which growers can build inexpensive storage that will effectively keep fruit over a much longer marketing period. Manufacture of quality horticultural products for sale continues in small units but shows growth, with increasing numbers entering the field.

Arrangements have been completed by which extension work in farm forestry is undertaken; the co-operating parties being the Massachusetts Agricultural College, the United States Department of Agriculture, and the Massachusetts Department of Conservation. The Commissioner of Conservation has very generously released part of the time of three men in the service of the State Forester, including the State Forester himself, so that the equivalent of more than the full time of one man is now spent in extension work in Farm Forestry. This work is organized through the college and county extension services.

The most pressing economic situation that has developed during the year has been in the tobacco industry. High prices for the past six years have caused increase of acreage and production, so that for five years ten million pounds per annum more tobacco have been produced than the markets require annually. The extension staff are being pressed by many requests for counsel in meeting this situation. Special publications are about to be issued dealing with the use of land which is taken out of tobacco production.

A part of the time of Mr. Markuson in rural engineering has been given to extension problems in that field. We appreciate this service as it has been necessary to decline many requests in the past through lack of personnel with which they might be met.

Home economics teaching has followed its prior well organized plans. Local groups are organized. These send leaders to a central point where training is given to them by the county home demonstration agent or the state specialist. These trained volunteer leaders then return to their local groups and transmit the

information which they have received. The leader-training plan was under great suspicion when it was first undertaken, but has proven workable; it is the only basis on which extension work may be expected to cover its entire field. The work in both clothing and nutrition has followed this trend. The work in home management has been crippled by lack of a specialist, so that no leader-training work, as such, has been undertaken in this project. Demands from the women of the state are quite as strong as ever for this work, and we are still unable to meet them.

Junior extension work or 4-H club work has continued its substantial improvement as to quality of work, maturity of club members, and numbers effectively reached. The deflation point was reached some three years ago, when the war-time spectacular and unimportant phases of club work were pretty well sloughed off. Since that time numbers have increased, and quality of work has improved.

The greatest needs of the extension service for the next year are more ample maintenance funds, and a specialist in Home Management. We have an efficient staff whose usefulness depends on the adequacy of the tools in their hands. It has been necessary to curtail our output of printed material, and to decline opportunities to co-operate in educational exhibits for lack of funds. A steady demand for home management service has been voiced for several years. The project cannot develop in the counties until a trained specialist prepares teaching materials and perfects the abilities of the home demonstration agents.

JOHN D. WILLARD,

Director of the Extension Service.

REPORT OF THE DIRECTOR OF THE EXPERIMENT STATION.

The outstanding development of the year just past was the passage of the national Purnell Act, which brings to the Station an increased grant of federal funds. This has made possible the institution of work for which there has long been need, but which the Station has been unable to undertake because of a shortage of funds. The terms of the Act make practically obligatory the conduct of research on a regional rather than on a localized state-wide basis. In effect it represents a federal appropriation for the common good which operates through the individual experiment stations.

The first project undertaken was a joint co-operative survey of the New England apple industry. This was organized on the basis of a section-wide project, but with the work of each state carried on under the supervision of the agricultural experiment station concerned, with the whole work correlated through the efforts of the New England Research Council on Marketing and Food Supply. The objectives of the study were several in number, the most important being that of giving to our orchardists better opportunity for planning to meet the needs of a definite market. In an industry in which production is deferred many years after the initial planting, a study such as this is peculiarly necessary and ultimately most profitable.

Supplementing the survey study the New England plan calls for other studies to assist New England in holding one of its great agricultural enterprises. Massachusetts' participation in the plan includes a study of the export demand for New England apples, and a study of the competition of the New England product with that raised elsewhere. It is also planned to initiate comprehensive studies of the utilization of cull and surplus crop through manufacture and preservation.

As regards future work under the Purnell Act, the spread of co-operative selling organizations in New England makes necessary an intensification of economic study with reference to agriculture. The present deplorable situation in the Connecticut Valley tobacco industry may serve as an illustration of a danger to which all selling organizations are exposed, and one which they are incapable of meeting unless served by a thorough-going research agency. The difficulty which is being met in the tobacco industry shows the impossibility, in a country where expansion of production is still possible, of any organization keeping monopoly control of production. Past history, however, shows the wastefulness of a system in which production is not gauged by the needs of the market. The object of

much of this work, therefore, is to help our organized agricultural industries in their task of determining extent of production by the needs of the market.

In addition to the above, the Station is instituting what it hopes may prove to be a comprehensive study of the competitive position of the more important farm enterprises of the State. It expects to determine the conditions under which Massachusetts farmers may expect to hold their own over a period of years in competition with other farmers who reach the same market. In fact, had such a study been made five years ago it would be of inestimable help in meeting the present emergency in the Connecticut Valley.

During the period in which the federal Purnell fund is increasing its annual appropriations, the Station does not intend to ask increased financial support from the State.

B. HASKELL,

Director of the Experiment Station.

REPORT OF THE DIRECTOR OF THE GRADUATE SCHOOL.

Inclusive of the summer quarter there have been registered in the Graduate School for the past year ninety-one students. Of this number, twenty are teaching in the public schools of this state, and forty-five are connected with colleges and universities. The remainder are widely distributed vocationally.

It is characteristic of graduate students that many of them do not devote their entire time to graduate study, largely because they must earn their livelihood; accordingly they have responsible positions and have to confine their graduate efforts to such time as is at their disposal. What work is done by such students is of excellent quality. They are serious in their graduate undertaking and are diligent and persistent in attaining their ends. That students who can give only part time to their studies can be stimulated by contact with graduate study, make progress in their field of endeavor, and receive the benefits derived from institutional connection, must ever be regarded as one of the greatest services of this Graduate School.

Three students completed their studies for the master of science degree this year. They are —

Miss Eleanor Frances Chase who presented a thesis on "The Phloroglucinol Furfural Reaction."

Mr. Henry Louwsma who presented a thesis on "The Determination of Iron in Nutrient Solutions and its Rôle in Plant Metabolism."

Mr. John Dayton Willard who presented a thesis on "A Study of the Rural Church in Six Hill Towns of Massachusetts: with Plans for Future Activity and Maintenance."

CHARLES E. MARSHALL,

Director of the Graduate School.

REPORT OF THE DIRECTOR OF SHORT COURSES.

During the past year several important changes were brought about in the plan of practice training on farms required of all Two-Year students. The opening date of classes in the fall has heretofore coincided with the beginning of college work. But when the time came to look for training jobs for our students, it was soon evident that college time or class time did not suit farm time. In other words calling students back to classes in mid September, right in the rush of harvesting when their services were most valuable, did not appeal to a good many practical farmers. The protest from various fruit-growers of the state was marked, and many other farmers urged a longer training period.

Once the suggestion was presented the logic of the request could not be denied. In fact, it is difficult to explain why the need for such an adjustment, both from the standpoint of increased experience for the student and a better labor distribution for the farmer, was not earlier felt and voiced. It was finally agreed by the fruit-

growers that if students could see them through the MacIntosh harvest it would be a satisfactory arrangement, and not too much time would be taken from the class-work of the first term. Other farm operations, too, would be greatly benefited by the extension. The opening date for the Two-Year course was then set for the first Monday in October, this year (1925) October 5th, and once that assurance was given, student positions for farm training and experience were secured without further difficulty. In fact, I am glad to say that Mr. Paul W. Viets, who supervises and arranges all student placements, found more positions available for Two-Year students, and of a better type for the training desired, than in any previous year.

A fair assumption is that there is a growing appreciation of the aid the College gives in thus placing high-grade labor on the farms of the state. There is an increasing recognition, too, that this service is efficient and discriminating in that a student's qualifications for the job have been carefully studied, and a fair statement of his past experience, skills, and general character is frankly presented to the employer. This is a much more comprehensive survey of the man's ability than the usual employment agency could possibly present. An interesting result of this placement training has been the many happy friendships formed between employer and student, in a number of cases leading to a permanent position after graduation.

It would be showing poor appreciation if we did not state that much of the success attained in our farm practice training should be credited to the excellent living and working conditions provided by farmers employing our students. Nothing will discourage a young man's interest in agriculture more quickly than to have to serve his apprenticeship where poor food, poor lodgings, and poor social conditions, to say nothing of a poor business, indicate a general lowering of living standards. Ideals and aspirations go to smash under such an ordeal. Every reasonable precaution is taken to guard against such situations with our Two-Year students and no position is approved without thorough investigation. We are regularly placing our men on many of the best farms in the state for this important period in their education.

To help show the earning value of this summer farm training for students, — besides its learning value — a careful record of each student's initial wage, increases, and bonuses was secured. Where board and room were provided their cash value was estimated based on actual conditions, in some cases \$10.00 per week; in others — and only a few — as low as \$7.50. Seventy men completed the full training period of six months with a total labor income of \$36,799.50.

Animal Husbandry, 18 men, total earnings	\$10,334 00
Average per man	\$574 11
Pomology, 16 men, total earnings	8,400 00
Average per man	525 00
Poultry, 14 men, total earnings	6,595 00
Average per man	471 07
Floriculture, 9 men, total earnings	4,425 50
Average per man	491 16
Vegetable Gardening, 5 men, total earnings	2,706 00
Average per man	541 20
Dairy Manufactures, 3 men, total earnings	1,695 00
Average per man	565 00

In presenting these figures it must be borne in mind that students range through all grades between skilled and unskilled, and cash wages varied from \$40.00 to \$90.00 per month. The classification should not be interpreted to show earning power in any one of the agricultural vocations listed, but is used solely to give a rough average of earnings for each group of students specializing in a certain course.

In connection with this study of student income from training work, opportunity was provided to secure data on graduates of a four-year school of business training. In a corresponding training period in banking, leather, wool, saleswork, and other business jobs, the average gross earnings per student closely approximated the wages of our Two-Year students in agriculture, being but very slightly in excess.

This item is of interest only in connection with the training schemes considered. It does serve to emphasize the financial return to young men in vocational agriculture at an early period in their training, with comparatively little experience and but a slight investment in education, — if the expenses of a four-year course in business are contrasted with the shorter period.

Another adjustment effected in the summer training was the placing of a definite number of credits on the work, to be secured only where satisfactory, intelligent, and interested service was rendered to the employer. Twenty-five credit points for the full period of practice work at the rate of one credit per week, were assigned as a requisite for certificate grade. This rating is being measured by a system of monthly training reports in which the student through carefully prepared questions is required to study the special type of farm business. This arrangement provides a more thorough teaching scheme and insures a fuller understanding of the job than a mere check on mechanical skills and routine work. The farm work is directly correlated with class-room work in this way.

As a final guard against any laxity in developing the essential skills and technique in practical agriculture, no student is registered for his final year's work in classes who has failed to submit satisfactory reports, or has shown an inability to carry on farm work well. A poorly trained group of farm workers is just as much a handicap to the business as a similar unskilled group in any other vocation or trade. It seems desirable therefore to maintain constantly a pretty definite goal in all phases of our work in providing practical agricultural training and in helping the student to gain a full realization of the qualifications for success on the job.

Registration in the Two-Year Course increased nearly twenty per cent for the year 1925-26, compared with enrollment of last year. Certificates were awarded to fifty-two graduates in June, making a total of 398 students who have completed the full course with credit during its six years of operation. In addition 29 students have completed the One-Year course in Vocational Poultry during the same period.

Winter School.

With the addition of a special course in Fruit-Growing to our Winter School curriculum, the opportunity for securing short, intensive training courses in particular branches of agriculture was further increased.

The ten day courses in Dairy Manufactures were well patronized. The course for Milk Inspectors proved popular and nearly all the leading cities of the state sent official representatives. The value of this training service rendered by the College in bringing about a more uniform system of inspection based upon the latest scientific investigation can not be too fully realized as a health safeguard.

Summer School.

To broaden the scope of training courses provided for teachers of the state, new courses have been provided in "Modern Philosophy of Education," "Methods in Social Studies," and "Nutrition Phases of Health Education."

The subjects dealing with Home Economics attracted many students, especially High School teachers, a good proportion coming from Boston and vicinity. It is worth while to note a growing appreciation among our Massachusetts teachers of the many advantages the College provides in its six weeks summer course.

Finally, I wish to quote from the 1924 report of the Committee on Instruction in Agriculture of the Association of Land-Grant Colleges. "There is . . . a widespread feeling that the large investments of funds in the buildings, equipment and facilities of the Colleges is not justified unless the plan and personnel of these institutions are being used to the fullest extent." It is to be hoped that through the medium of our short-course program, we are helping to justify the investment our citizens have made in their College of Agriculture.

ROLAND H. VERBECK,
Director of Short Courses.

TABLE I. — NEW APPOINTMENTS.

A. In the Academic Departments.

- Instructor in Horticulture: Luther B. Arrington, B.Sc., Massachusetts Agricultural College, 1923.
- Instructor in Chemistry: Frederic R. Butler, B.Sc., Worcester Polytechnic Institute, 1920; M.Sc., Clark, 1922; A.M., Harvard 1924; Ph.D., Harvard, 1925.
- Instructor in Agricultural Economics: Mary J. Foley, B.Sc., Massachusetts Agricultural College, 1924.
- Instructor in German: Paul Keller, B.Sc., Boston University, 1925.
- Instructor in Dairying: Merrill J. Mack, B.Sc., Pennsylvania State College 1923; M.Sc., University of Wisconsin, 1925.
- Assistant Professor of Rural Engineering: Miner J. Markuson, B.Sc., University of Minnesota, 1923.
- Instructor of Microbiology: Harry T. Mortensen, B.Sc., Michigan State College, 1924.
- Professor and Head of the Department of Physics: Wallace F. Powers, A.B. Clark, 1910; A.M., Clark, 1911; Ph.D., Clark, 1914.
- Assistant Professor of Landscape Gardening: Leon R. Quinlan, B.Sc., Colorado Agricultural College, 1921; M.L.A., Harvard 1925.
- Instructor in Mathematics: George F. Shumway, B.Sc. Massachusetts Agricultural College, 1925.
- Instructor in Agronomy: Orman E. Street, B.Sc., South Dakota State College, 1924.
- Instructor in Physical Education: Malcomb E. Tumey, B.Sc., Massachusetts Agricultural College, 1923.
- Instructor in Microbiology: Dennis R. A. Wharton, B.S.A., Ontario Agricultural College, 1924.

B. In the Experiment Station.

- Assistant Research Professor of Microbiology: Leon A. Bradley, B.Sc., Wesleyan, 1922; Ph.D., Yale, 1925.
- Field Assistant in Pomology: Walter L. Cutler.
- Assistant Research Professor of Botany: Emil F. Guba, B.Sc., Massachusetts Agricultural College, 1919; Ph.D., University of Illinois, 1923.
- Assistant Research Professor of Entomology: Warren D. Whitcomb, B.Sc., Massachusetts Agricultural College, 1917.

C. On Purnell Funds.

- Research Professor of Horticultural Manufactures (appointment effective Dec. 1, 1925): Carl R. Fellers, A.B., Cornell, 1915; M.Sc., Rutgers, 1916; Ph.D., Rutgers, 1917.
- Assistant Research Professor of Dairying: Arthur W. Phillips, B.Sc., Tufts, 1915; A.M., Harvard, 1921.
- Laboratory Assistant in Agricultural Economics: Ruth E. Sherburne, B.Sc., Simmons, 1919.
- Assistant Research Professor of Agricultural Economics: Hubert W. Yount, B.S.A., Ohio State University, 1921; M.Sc., Massachusetts Agricultural College, 1923.

D. In the Control Service.

- Collector of blood samples, poultry disease elimination: Wilbert D. Field, B.Sc., Massachusetts Agricultural College, 1919.
- Analyst, poultry disease elimination: Mrs. Leila Prescott.
- Technical Assistant: Harold F. Rowley, B.Sc., Massachusetts Agricultural College, 1925.

E. In the Extension Service.

- Supervisor of Exhibits and Extension Courses: Earle S. Carpenter, B.Sc., Massachusetts Agricultural College, 1924.
- Assistant Extension Professor of Nutrition: May E. Foley, B.Sc., Michigan State College 1918; M.A., Columbia, 1922.
- Extension Professor of Agronomy: John P. Helyar, B.S.A., University of Vermont 1909; M.Sc., University of Vermont, 1912.

TABLE II. — SPEAKERS FOR THE YEAR.

*A. Speakers at Assembly for the Year ending Nov. 30, 1925.***1924**

- Dec. 4. Mr. F. F. Rockwell, Bridgeton, New Jersey.
 Dec. 11. Mr. Sumner R. Parker, Amherst.

1925

- Jan. 7. Mr. Roscoe C. Edlund, Springfield.
 Jan. 14. Professor Warren K. Green, Amherst.
 Jan. 21. Professor Samuel R. Williams, Amherst.
 Jan. 28. Professor Harry E. Barnes, Northampton.
 Feb. 4. Mr. Jewell B. Knight, Arlington.
 Feb. 11. Professor Albert Dickens, Manhattan, Kansas.
 Feb. 18. Student Forum.
 Feb. 25. Rev. Stoyen Vatralski, Bulgaria.
 Mar. 4. Mr. Robindra C. Nag, India.
 Mar. 11. Rev. Ralph A. Christie, Florence.
 Apr. 1. Educational Films, United States Forestry Service.
 Apr. 8. Mr. M. J. Duryea, Greenfield.
 Apr. 15. Professor William H. Burnham, Worcester.
 Apr. 22. Mrs. Margaret Briscoe Hopkins, Amherst.
 Apr. 29. Student Forum.
 May 6. Mayor Edwin O. Childs, Newton.
 May 13. Hon. George B. Churchill, Amherst.
 May 20. Burnham Declamation Contest.
 May 27. Hon. Fred W. Cross, Boston.
 June 3. Professor Paul H. Douglas, Chicago, Ill.
 Sept. 24. Mr. Hugh G. Van Pelt, Chicago, Ill.
 Oct. 1. Mr. George P. Campbell, Shirley.
 Oct. 8. Orrin C. Lester, New York City.
 Oct. 15. Lt. Alden G. Alley, Boston.
 Oct. 22. Mr. Horace D. Taft, Watertown, Conn.
 Oct. 29. President William A. Neilson, Northampton.
 Nov. 5. Rev. John H. Nolan, Springfield.
 Nov. 12. Student Forum.
 Nov. 19. Rev. Louis C. Cornish, Boston.

*B. Speakers at Sunday Chapel for Year ending Nov. 30, 1925.***1924**

- Dec. 7. Rev. James Gordon Gilkey, Springfield.
 Dec. 14. Dr. William I. Chamberlain, New York City.

1925

- Jan. 4. Principal Alfred E. Stearns, Andover.
 Jan. 11. Dean Charles R. Brown, New Haven, Conn.
 Jan. 18. Rev. John Haynes Holmes, New York City.
 Jan. 25. Bishop Edwin H. Hughes, Chicago, Ill.
 Feb. 1. President Bernard I. Bell, Annandale-on-Hudson, N. Y.
 Feb. 8. Rev. W. A. Atkinson, Rochester, Pa.
 Feb. 15. Pres. Paul D. Moody, Middlebury, Vt.
 Mar. 1. Rev. John B. Hanna, M.A.C.
 Mar. 8. Rev. Edwin B. Robinson, Holyoke.
 Mar. 15. Rev. Kenneth C. McArthur, Cambridge.
 Apr. 5. Rev. Ralph A. Christie, Florence.
 Apr. 26. Rev. John B. Hanna, M.A.C.
 Nov. 1. Bishop Francis J. McConnell, Pittsburgh, Pa.
 Nov. 8. Rev. James G. Gilkey, Springfield.
 Nov. 15. Rev. John B. Hanna, M.A.C.
 Nov. 22. Rev. John Herman Randall, New York City.

TABLE III. — ATTENDANCE.

	REGISTRATION NOV. 1, 1924.			REGISTRATION NOV. 1, 1925.		
	Men.	Women.	Total.	Men.	Women.	Total.
<i>A. In Work of College Grade.</i>						
Graduate Students	53	8	61	42	5	47
Senior Class	79	4	83	90	15	105
Junior Class	99	14	113	83	11	94
Sophomore Class	100	10	110	110	28	138
Freshman Class	153	31	184	140	39	179
Special Students	9	11	20	4	5	9
Totals	493	78	571	469	103	572
<i>B. Short Course Enrollment.</i>						
Two-Year Course, second year	59	8	67	75	9	84
Two-Year Course, first year	85	9	94	93	12	105
Vocational Poultry Course	—	—	—	3	—	3
Two-Year Course, special students	1	1	2	—	—	—
Totals	145	18	163	171	21	192
<i>C. Other Short Course Enrollment.</i>						
Winter School	72	11	83	76	10	86
Summer School	55	89	144	58	113	171
Totals	127	100	227	134	123	257

D. Convention Registration.

1924. 1925.

	1924.	1925.
Polish Farmers' Day	200	175
Farmers' Week and Annual Poultry Convention	3,000	3,000
Junior Boys' and Girls' Prize Winners' Camp	100	125
Extension Workers' Conference	100	100
Feed Dealers' Conference	40	—
Hampden County Club Members	100	—
Bankers' Conference	20	—
Women's Clubs	80	50
Lawn Day	30	67
Greenkeepers' Day	35	—
Boys' Camp	50	36
School for Veterinarians	—	52
Meeting of Grange Lecturers	—	100
Hampshire County Fruit Meeting	—	35
Tri-State Conference on Clothing	—	50
Middlesex County Club Champions	—	100
Camp Vail Training School	—	40
	3,755	3,930

TABLE IV. — LEGISLATIVE BUDGET, 1925.

ITEMS.	Requested, 1925.	Appropriated, 1925.
Additional land, Cranberry Station at East Wareham	\$1,000	—
Refrigerating plant at Paige Laboratory	2,000	—
Culvert for brook	2,505	—
Roads and Walks	10,000	\$1,000
Fencing Fruit Plantations	3,000	3,000
Horticultural Manufactures Building	60,000	—
Tunnel, power plant to Stockbridge Hall	38,500	—
Women's gymnasium and equipment	16,450	—
Living quarters for foreman at Tillson Farm	6,000	—
Extension of athletic field area	22,500	—
Other permanent improvements, athletic field area	10,500	—
Tunnel to first pit south of power plant	4,615	—
New Steam line, east experiment station to microbiology building	4,705	—
Livestock replacements	4,000	4,000
Replacement of Cavalry Barn	—	16,500 ¹
Totals	\$185,775	\$24,500

¹ Granted October 14, 1925 from the Governor's Emergency Account to replace Cavalry Barn destroyed by fire September 3, 1925.

TABLE V. — CURRENT ACCOUNT, STATE FUNDS.

	Requested 1925.	Appropriated 1925.	Deficiency Appropriation (Balance from 1924).	Expended 1925.	Balance.
Personal Services:					
Administration	\$36,650	\$35,300	—	\$33,173 75	\$2,126 25
Instruction	202,871	200,000	—	193,015 01	6,984 99
General Maintenance	132,125	129,000	\$15 00	145,718 42	—16,703 42
Experiment Station	82,650	79,200	50 00	79,185 90	64 10
Extension Service	55,975	50,600	—	50,010 08	589 92
Market Garden	7,000	6,000	—	6,836 90	—836 90
Short Courses	62,738	61,500	—	58,364 20	3,135 80
Travel, Office and other expenses	45,000	42,500	462 53	35,787 29	7,175 24
Teaching, lab. supplies and equip.	56,000	56,000	533 34	50,896 18	5,637 16
Experiment Station supplies, equip. and publications	17,850	15,500	75 31	14,817 25	758 06
Experiment Station travel and office expenses	4,500	4,000	29 24	3,374 25	654 99
Extension Service supplies, equip., travel etc.	35,750	33,000	596 70	35,113 46	—1,516 76
Short Courses	11,400	11,400	156 74	10,782 43	774 31
Heat, light and power	65,000	65,000	14,109 55	49,624 52	29,485 03
Farm and Grounds	20,000	20,000	30 36	14,318 80	5,711 56
Repairs, ordinary	25,000	25,000	57 92	30,418 33	—5,360 41
Replacements	25,000	20,000	1,557 64	21,301 88	255 76
Market Gardening	5,000	5,000	6 38	4,187 92	818 46
Fertilizer Law Control	14,000	13,500	—	13,483 42	16 58
Poultry Disease Law	8,500	9,000	6 02	8,917 63	88 39
Milk-testing inspection law	600	600	—	701 92	—101 92
Trustees' Expenses	1,200	1,200	104 28	1,250 93	53 35
Printing Reports	2,000	2,000	904 70	1,667 44	1,237 26
Commercial Feedstuffs	9,000	9,000	—	8,972 84	27 16
Emergency Fund	—	5,000	—	—	—
	\$925,809	\$899,300	\$18,695 71	\$871,920 75	\$41,074 96

TABLE VI. — STATISTICS OF FRESHMEN ENTERING MASSACHUSETTS AGRICULTURAL COLLEGE, SEPTEMBER, 1925.

A. Home Addresses of Students (classified by Towns and Cities).

Abington	1	Framingham	1	Port Chester, N. Y.	1
Adams	1	Gardner	1	PROVIDENCE, R. I.	1
Agawam	1	GLOUCESTER	1	QUINCY	1
Amherst	10	Great Barrington	1	Reading	1
Arlington	2	Greenfield	9	Richford, Vt.	1
Ashby	2	Hadley	2	Rockland	1
Ashfield	3	Hampden	1	Sheffield	1
ATTLEBORO	1	Hardwick	1	Shelburne Falls	2
Auburn	1	Holden	2	Sherborn	1
Bedford	1	Holliston	1	Shirley	1
Belmont	1	HOLYOKE	7	Shrewsbury	2
Bolton	2	Lancaster	1	SOMERVILLE	1
Boston	14	Lincoln	1	Southbridge	1
Braintree	1	LYNN	1	South Hadley	2
BRATTLEBORO, Vt.	1	MALDEN	2	SPRINGFIELD	6
Bridgewater	1	MELROSE	3	Stamford, Ct.	1
Brimfield	1	Middleborough	1	Strong, Maine	1
BROCKTON	1	Milford	1	Sudbury	1
BROOKLYN, N. Y.	2	Millis	1	Swansea	1
CAMBRIDGE	1	Milton	1	TAUNTON	1
Carlisle	1	Montague	3	Walpole	1
Chepachet, R. I.	1	MONTPELIER, Vt.	1	Wareham	1
Chester Depot, Vt.	1	Monson	1	Watertown	1
CHICOPEE	2	Natick	1	Westborough	1
Clinton	1	NEWTON	5	WESTFIELD	1
Conway	1	Norfolk	1	WEST HARTFORD, CONN.	1
Dalton	3	NORTH ADAMS	2	Westminster	1
Dartmouth	1	NORTHAMPTON	5	West Springfield	1
Dighton	1	Northbridge	3	Williamstown	1
Easthampton	4	Northfield, Vt.	1	Wilmington, Vt.	1
EVERETT	1	Norwalk, Conn.	1	Windsor	1
FALL RIVER	2	PEABODY	1	WORCESTER	5
Falmouth	1	PITTSBURGH, PA.	1	Yarmouth	1
FITCHBURG	1				

B. Home Addresses (classified by States and Countries).

	Number.	Per Cent.		Number.	Per Cent.
Connecticut	3	1.67	Rhode Island	2	1.12
Maine	1	.56	Vermont	6	3.35
Massachusetts	163	91.06			
New York	3	1.67		179	99.98
Pennsylvania	1	.56			

C. Home Addresses (classified by Counties of Massachusetts).

	Number.	Per Cent.		Number.	Per Cent.
Barnstable	2	1.23	Middlesex	29	17.79
Berkshire	10	6.13	Norfolk	6	3.68
Bristol	7	4.29	Plymouth	6	3.68
Essex	3	1.84	Suffolk	14	8.59
Franklin	18	11.05	Worcester	24	14.72
Hampden	21	12.88			
Hampshire	23	14.11		163	99.99

D. Nativity of Parents.

	Number.	Per Cent.
Neither parent foreign born	122	68.16
Both parents foreign born	33	18.43
Father (only) foreign born	7	3.91
Mother (only) foreign born	14	7.82
No statistics	3	1.68
	179	100.00

E. Education of Father.

Common School	67	37.43
High School	56	31.29
Business School	15	8.38
College or University	35	19.55
No statistics	6	3.35
	179	100.00

F. Occupation of Father.

Agriculture and Horticulture	35	19.54
Artisans	56	31.28
Business	37	20.67
Deceased or no statistics	15	8.38
Miscellaneous	15	8.38
Professional	21	11.73
	179	99.98

G. *Intended Vocation of Student.*

	Men.	Women.	Total.	Per Cent.
Farming	27	5	32	17.88
Landscape Gardening	22	7	29	16.20
General Teaching	11	14	25	13.97
Commercial Chemistry	24	—	24	13.41
Agricultural Chemistry	8	—	8	4.47
Forestry	8	—	8	4.47
Engineering	7	—	7	3.91
Other Agricultural Work	4	—	4	2.24
Floriculture	2	1	3	1.68
Entomology	3	—	3	1.68
Agricultural teaching	3	—	3	1.68
Dietetics	—	3	3	1.68
Religious and Social Work	1	2	3	1.68
Medicine	2	—	2	1.12
Business	2	—	2	1.12
Domestic Science Teaching	—	1	1	.50
Extension Service	—	1	1	.50
Undecided	16	5	21	11.73
	140	39	179	99.92

H. *Farm Experience.*

Brought up on a farm	36	9	45	25.14
Not brought up on a farm and having no or practically no farm experience	46	27	73	40.78
Not brought up on a farm, but having had some farm experience	58	3	61	34.08
	140	39	179	100.00

I. *Miscellaneous Statistics.*

Average age (years)	18.86
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REPORT OF THE TREASURER

For the Fiscal Year ending November 30, 1925.

BALANCE SHEET.

	1924	DEBIT.	CREDIT.
Dec. 1. To balance on hand		\$37,385 22	
1925			
Nov. 30. To departmental income		164,794 54	
Nov. 30. To Receipts from State Treasurer		697,060 46	
Nov. 30. To refunds to State Treasurer		4,592 26	
Nov. 30. To Receipts from United States Treasurer		121,868 08	
Nov. 30. To bills paid by State Treasurer		228,717 72	
Nov. 30. Refunds transferred to State Treasurer			\$4,592 26
Nov. 30. Expenditures for fiscal year			1,045,009 34
Nov. 30. Income transferred to State Treasurer			164,794 54
Nov. 30. Balance on hand			40,022 14
		\$1,254,418 28	\$1,254,418 28

**STATEMENT OF LEGISLATIVE APPORTIONMENT AND EXPENDITURES FOR FISCAL
YEAR ENDING NOVEMBER 30, 1925 AND APPORTIONMENT REQUESTED FOR 1926.**

	Apportionment for Last Fiscal Year.		Expenditures.		Requested Apportionment for New Fiscal Year.	
College:						
Personal Services	\$364,315 00		\$389,272 05		\$381,104 00	
Maintenance	223,693 70		163,680 25		211,000 00	
		\$588,008 70		\$552,952 30		\$592,104 00
Experiment Station:						
Personal Services	\$79,250 00		\$79,185 90		\$79,200 00	
Maintenance	19,604 55		18,191 50		19,500 00	
		98,854 55		97,377 40		98,700 00
Extension Service:						
Personal Services	\$50,600 00		\$50,010 08		\$54,995 00	
Maintenance	33,596 70		35,113 46		36,000 00	
		84,196 70		85,123 54		90,995 00
Short Courses:						
Personal Services	\$61,500 00		\$58,364 20		\$61,660 00	
Maintenance	11,556 74		10,782 43		13,000 00	
		73,056 74		69,146 63		74,660 00
Market Garden Field Station:						
Personal Services	\$6,000 00		\$6,836 90		\$8,000 00	
Maintenance	5,006 38		4,187 92		6,000 00	
		11,006 38		11,024 82		14,000 00
Trustees travel	\$1,304 28		\$1,250 93		\$1,200 00	
Printing reports	2,904 70		1,667 44		2,000 00	
Commercial feedstuffs	9,000 00		8,972 84		10,000 00	
Totals		13,208 98		11,891 21		13,200 00
Fertilizer Law	\$13,500 00		\$13,483 42		\$14,500 00	
Poultry Law	9,006 02		8,917 63		10,300 00	
Milk testing Law	600 00		701 92		600 00	
Totals		23,106 02		23,102 97		25,400 00
Replacements	\$21,557 64	21,557 64	\$21,301 88	21,301 88	\$25,000 00	25,000 00
Emergency	5,000 00	5,000 00	930 64	930 64	5,000 00	5,000 00
Totals		\$917,995 71		\$872,851 39		\$939,059 00
Balance unexpended		—		45,144 32		—
				\$917,995 71		

CASH STATEMENT.

	Other Funds.	State Funds.	Totals.
Balance December 1, 1924	\$37,385 22	—	\$37,385 22
<i>Receipts.</i>			
College receipts from students and others	—		28,683 08
Tuition	—	\$5,740 00	
Laboratory fees	—	5,776 16	
Rent	—	17,166 92	
Department Sales			76,357 01
Products	—	68,718 04	
Miscellaneous	—	7,638 97	
Experiment Station			13,613 75
Cranberry receipts		2,241 67	
Chemical receipts	—	301 22	
Miscellaneous	—	11,070 86	
Extension Service			967 95
Correspondence	—	737 90	
Miscellaneous	—	230 05	
Short Courses			3,942 08
Students' fees	—	3,732 08	
Winter School	—	210 00	
Miscellaneous	—	—	
Market Garden Field Station			658 68
Produce	—	658 68	
Feed Law	—	18,240 84	18,240 84
Fertilizer Law	—	15,543 47	15,543 47
Milk Testing Law	—	885 16	885 16

			P.D. 31.
	Other Funds.	State Funds.	Totals.
Poultry Disease Law	—	\$5,902 52	\$5,902 52
Treasurer of the Commonwealth			697,060 46
Maintenance	—	689,529 67	
Special appropriations	—	2,092 48	
Endowment	\$3,313 32		
Department of Education	2,124 99		
Federal Government			121,868 08
Land Grant of 1862	7,300 00		
Hatch Fund of 1887	15,000 00		
Morrill Fund of 1890	16,666 67		
Adams Fund of 1906	15,000 00		
Nelson Fund of 1907	16,666 66		
Smith Lever Fund of 1914	31,234 75		
Short Courses, Federal Project	10,000 00		
Purnell Fund of 1925	10,000 00		
Bills paid by State Treasurer	—	228,717 72	228,717 72
	\$164,691 61	\$1,085,134 41	\$1,249,826 02
<i>Payments.</i>			
College expense			\$598,861 44
Personal service	\$45,909 14	\$389,272 05	
Maintenance	—	163,680 25	
Experiment Station			133,229 26
Personal service	32,856 43	79,185 90	
Maintenance	2,995 43	18,191 50	
Extension Service			117,534 94
Personal Service	30,435 16	50,010 08	
Maintenance	1,976 24	35,113 46	
Short Courses			79,643 70
Personal service	5,172 86	58,364 20	
Maintenance	5,324 21	10,782 43	
Market Garden Field Station			11,024 82
Personal service	—	6,836 90	
Maintenance	—	4,187 92	
Trustees Travel	—	1,250 93	1,250 93
Printing Reports	—	1,667 44	1,667 44
Replacements	—	21,301 88	21,301 88
Commercial feedstuffs	—	8,972 84	8,972 84
Fertilizer Law	—	13,483 42	13,483 42
Milk Testing Law	—	701 92	701 92
Poultry Disease Law	—	8,917 63	8,917 63
Special appropriations	—	—	43,826 86
1923 Chemistry Laboratory	—	5,614 22	
1924 Roads and Walks	—	260 83	
1924 Rural Engineering	—	2,821 70	
1924 Emergency needs	—	5,000 00	
1924 Market Garden Field Station	—	23,004 31	
1925 Roads and Walks	—	1,000 00	
1925 Fencing Fruit Plantation	—	3,000 00	
1925 Emergency needs	—	930 64	
1925 Livestock replacement	—	2,195 16	
Income	—	164,794 54	164,794 54
Refunds to State Treasurer	—	4,592 26	4,592 26
Balance	40,022 14	—	40,022 14
	\$164,691 61	\$1,085,134 41	\$1,249,826 02

BUDGET APPROPRIATION FOR CURRENT EXPENSES FOR YEAR ENDING NOV.
30, 1925.

Personal services:	Appropriation.	Current Year.	Balances.
Administration	\$35,300 00	\$33,173 75	\$2,126 25
Instruction	200,000 00	193,015 01	6,984 99
Maintenance	129,015 00	—	—16,703 42
Departmental	—	73,454 16	—
Farm	—	30,910 90	—
Operating	—	41,353 36	—
Repairs Ordinary	—	17,364 87	—17,364 87
Replacements	—	4,509 60	—4,509 60
Experiment Station	79,250 00	79,185 90	64 10
Fertilizer Control Law	—	10,247 60	—10,247 60
Poultry Disease Law	—	6,876 13	—6,876 13
Milk Testing Inspection Law	—	360 00	—360 00
Commercial Feedstuffs	—	7,211 87	—7,211 87
Extension Service	50,600 00	50,010 08	589 92
Market Garden Field Station	6,000 00	6,836 90	—836 90
Short Courses	61,500 00	58,364 20	3,135 80
Total Personal Services	\$561,665 00	\$612,874 33	—\$51,209 33
Travel	\$42,962 53 {	\$5,427 43 {	\$7,175 24
Office and other Expenses		30,359 86 {	
Teaching and Laboratory Supplies		43,749 73 {	
Minor Equipment	56,533 34 {	7,146 45 {	5,637 16
Experiment Station:			
Supplies and Equipment	15,575 31	14,817 25	758 06
Travel	4,029 24 {	2,274 78 {	654 99
Office Expenses		1,099 47 {	
Extension Services:			
Supplies and Equipment	33,596 70 {	17,165 02 {	—1,516 76
Travel		17,948 44 {	
Market Garden Field Station	5,006 38	4,187 92	818 46
Short Courses:			
Travel	11,556 74 {	1,436 22 {	774 31
Office and other Expenses		9,346 21 {	
Heat, Light and Power	79,109 55	49,624 52	29,485 03
Farm	20,030 36	14,318 80	5,711 56
Repairs Ordinary	25,057 92	13,053 46	12,004 46
Replacements	21,557 64	16,792 28	4,765 36
Fertilizer Control Law:			
Travel	13,500 00 {	987 47 {	10,264 18
Office and other Expenses		2,248 35 {	
Poultry Disease Law:			
Travel	9,006 02 {	1,224 08 {	6,964 52
Office and other Expenses		817 42 {	
Milk Testing Inspection Law:			
Travel	600 00 {	325 06 {	258 08
Office and other Expenses		16 86 {	
Trustee's Expenses	1,304 28	1,250 93	53 35
Printing Reports	2,904 70	1,667 44	1,237 26
Commercial Feedstuffs:			
Travel	9,000 00 {	663 73 {	7,239 03
Office and other Expenses		1,097 24 {	
Total	\$912,995 71	\$871,920 75	\$41,074 96

College Dept.:

	Appropriation.	Current Year.	P.D. 31. Balances.
Dean's Office	\$3,945 00	\$3,900 65	\$44 35
Executive Order	11,430 21	8,537 04	2,893 17
President's Office	18,405 63	18,740 06	-334 43
Registrar's Office	3,151 49	3,126 25	25 24
Treasurer's Office	19,199 19	18,976 05	223 14
Agricultural Economics	9,315 10	9,346 01	-30 91
Agricultural Education	6,052 50	5,947 93	104 57
Agronomy	6,327 84	6,297 87	29 97
Animal Husbandry	2,246 31	2,208 97	37 34
Beekeeping	2,670 00	2,673 36	-3 36
Botany	11,485 89	11,511 84	-25 95
Chemistry	19,204 43	19,398 15	-193 72
Dairying	39,438 00	37,898 04	1,539 96
Economics and Sociology	2,772 99	2,691 59	81 40
Entomology	9,177 00	9,115 74	61 26
Farm	40,303 86	46,487 23	-6,183 37
Farm Management	5,561 35	5,575 11	-13 76
Floriculture	11,528 90	11,400 98	127 92
Forestry	2,781 42	2,669 15	112 27
Freshman Agriculture	300 00	155 82	144 18
General Agriculture	5,566 37	5,587 54	-21 17
General Expense	190 95	2,470 30	-2,279 35
General Horticulture	17,408 89	16,741 61	667 28
Graduate School	200 00	130 41	69 59
Grounds	10,376 20	10,370 35	5 85
Horticultural Mfg.	7,482 75	7,097 36	385 39
Hospital	4,021 22	4,098 57	-77 35
Landscape Gardening	7,144 28	7,118 30	25 98
Language and Literature	21,943 37	21,767 20	176 17
Library	16,258 62	16,522 84	-264 22
Mathematics	9,695 00	9,667 17	27 83
Microbiology	10,578 39	10,411 64	166 75
Military Science	2,927 40	2,783 02	144 38
Mount Toby	3,500 00	2,074 26	1,425 74
Physical Education	12,270 00	12,329 45	-59 45
Physics	5,170 00	5,323 73	-153 73
Operating and Maintenance	157,356 75	129,447 83	27,908 92
Pomology	11,362 75	11,730 92	-368 17
Poultry	25,462 69	24,583 76	878 93
Rural Engineering	5,069 34	5,062 09	7 25
Rural Home Life	11,008 38	11,316 88	-308 50
Rural Sociology	192 58	92 58	100 00
Vegetable Gardening	6,865 00	6,804 16	60 84
Veterinary	8,923 83	9,000 67	-76 84
Women's Dormitory	3,515 00	4,201 57	-686 57
Zoölogy and Geology	4,020 00	4,033 35	-13 35
Salary Surplus	9,111 24	-	9,111 24
Replacement President's Order	-57 79	-	-57 79
Replacement Unapportioned	2 80	-	2 80

Total College Expenses	\$602,863 12	\$567,425 40	\$35,437 72
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Exper. Station Dept.:	Appropriation.	Current Year.	Balances.
Administration	\$9,552 69	\$9,031 75	\$520 94
Agricultural Economics	2,615 78	2,600 52	15 26
Agronomy	5,643 02	5,654 47	-11 45
Botany	12,228 36	11,791 17	437 19
Chemistry	14,445 29	14,428 44	16 85
Cranberry	9,520 80	9,570 92	-50 12
Entomology	6,606 43	6,523 73	82 70
Farm Management	250 00	327 91	-77 91
Freight and Express	300 00	413 60	-113 60
Library	775 00	716 37	58 63
Market Garden Field Station	2,688 33	2,688 33	-
Meteorology	1,100 00	1,068 84	31 16
Microbiology	2,318 89	2,306 45	12 44
Pomology	6,919 16	6,676 47	242 69
Poultry	9,986 22	10,169 86	-183 64
Rural Engineering	200 00	83 07	116 93
Station Service	14,897 63	13,770 56	1,127 07
Veterinary Science	3,383 33	3,342 37	40 96
Fertilizer Control Law	13,500 00	13,483 42	16 58
Poultry Disease Law	9,006 02	8,917 63	88 39
Milk Testing Inspection Law	600 00	701 92	-101 92
Commercial Feedstuffs	9,400 74	9,373 58	27 16
Salary Surplus	-788 95	-	-788 95
Replacement surplus	-188 17	-	-188 17
Total Experiment Station	\$134,960 57	\$133,641 38	\$1,319 19
Exten. Service Dept.:			
Administration	\$17,679 15	\$18,141 46	-\$462 31
Animal Husbandry	2,102 00	1,657 49	444 51
Animal Pathology	-	221 87	-221 87
Clothing	2,982 00	2,949 98	32 02
Co-op. Marketing	4,418 73	4,533 87	-115 14
Correspondence Courses	3,511 84	2,436 07	1,075 77
County Agents	2,816 26	2,748 04	68 22
Crop Protection	100 00	-	100 00
Dairying	1,500 00	1,571 37	-71 37
Exhibits	2,057 50	1,860 63	196 87
Extension Courses at College	3,342 95	4,684 64	-1,341 69
Extension Schools	1,503 58	915 98	587 60
Farm Management	2,185 50	1,860 24	325 26
Forestry	-	-	-
Gardening	1,934 00	2,179 05	-245 05
Home Demonstration	3,758 42	3,729 57	28 85
Horticultural Mfg.	3,414 00	3,806 64	-392 64
Household Management	550 00	1,284 39	-734 39
Junior Extension	11,321 81	12,639 52	-1,317 71
Landscape Gardening	100 00	172 05	-72 05
Lectures	400 00	155 53	244 47
Library Extension	250 00	45 75	204 25
Nutrition	3,069 83	3,099 14	-29 31
Pomology	2,722 00	2,936 75	-214 75
Poultry Husbandry	3,396 55	3,467 60	-71 05
Printing	8,376 84	7,630 40	746 44
Rural Engineering	100 00	113 88	-13 88
Soils and Crops	2,289 31	2,282 74	6 57
Salary Surplus	315 54	-	315 54
Replacement Surplus	2 11	-	2 11
Total Extension Service	\$86,199 92	\$87,124 65	-\$924 73

Miscellaneous:

Short Courses:	Appropriation.	Current Year.	Balances.
Agricultural Economics	\$585 00	\$560 08	\$24 92
Agronomy	4,575 26	4,527 61	47 65
Animal Husbandry	3,460 00	3,445 16	14 84
Dairying	7,395 00	7,393 43	1 57
Entomology	100 00	107 76	-7 76
Farm Management	1,430 00	1,411 83	18 17
Floriculture	2,972 82	2,958 53	14 29
Forestry	25 00	-	25 00
General Horticulture	3,583 45	3,487 61	95 84
Home Economics	1,360 00	1,418 08	-58 08
Horticultural Mfg.	500 61	578 33	-77 72
Library	100 00	48 69	51 31
Microbiology	50 00	47 68	2 32
Office	23,300 64	23,056 06	244 58
Physical Education	1,895 00	1,890 81	4 19
Pomology	8,134 23	7,823 35	310 88
Poultry	2,475 00	2,475 00	-
Rural Engineering	5,941 76	5,935 39	6 37
Treasurer's Office	150 00	156 94	-6 94
Vegetable Gardening	1,981 51	1,964 23	17 28
Salary Surplus	3,241 46	-	3,241 46
Total Short Courses	\$73,256 74	\$69,286 57	\$3,970 17
Market-Garden Field Station	\$11,506 38	\$11,524 38	-\$18 00
Trustees Expenses	1,304 28	1,250 93	53 35
Printing Reports	2,904 70	1,667 44	1,237 26
Total Miscellaneous	\$912,995 71	\$871,920 75	\$41,074 96

Special Appropriations.

	Appropriation.	Expenditure to Date.	Balances.
1922 Chemistry Laboratory	\$5,614 22	\$5,614 22	
1924 Roads and Walks	260 83	260 83	
1924 Rural Engineering	2,821 70	2,821 70	
1924 Emergency Needs	5,000 00	5,000 00	
1924 Market-Garden Field Station	23,004 36	23,004 31	\$0 05
1925 Roads and Walks	1,000 00	1,000 00	
1925 Fencing Fruit Plantation	3,000 00	3,000 00	
1925 Emergency Fund	5,000 00	930 64	4,069 36
1925 Livestock Replacement	4,000 00	2,195 16	1,804 84
Total Special Appropriations	\$49,701 11	\$43,826 86	\$5,874 25

COLLEGE BUILDINGS (ESTIMATED VALUE, 1925).

	Inventory at Beginning of Year.	Per Cent deducted.	Value at Beginning of Year less Deterioration.	Repairs and Improvements during Year.	Total Value at Close of Fiscal Year.
Adams Hall	\$123,792 64	2	\$121,316 79	\$1,267 68	\$122,584 47
Apiary	2,856 19	2	2,799 07	57 11	2,856 18
Cashier's House	2,285 16	5	2,170 90	157 52	2,328 42
Chemistry Store House	48 56	2	47 59	—	47 59
Clark Hall	59,166 37	2	57,983 04	929 91	58,912 95
Cold Storage Laboratory	9,970 80	2	9,771 38	15 39	9,786 77
Dairy Barn and Storage	28,930 43	3	28,062 52	906 20	28,968 72
Draper Hall	73,431 50	3	71,228 55	2,926 24	74,154 79
Drill Hall and Gun Shed	8,955 89	5	8,508 10	229 31	8,737 41
Durfee Glass House, old	6,957 56	5	6,609 68	135 56	6,745 24
Durfee Glass House, new	9,790 89	5	9,301 35	398 70	9,700 05
Farm Blacksmith Shop	405 59	3	393 42	—	393 42
Farm Bungalow No. 1	2,444 80	3	2,371 46	67 88	2,439 34
Farm Bungalow No. 2	4,265 16	3	4,137 21	84 65	4,221 86
Farm Bungalow No. 3	4,207 93	3	4,081 69	09	4,081 78
Farm House No. 1	3,276 90	3	3,178 59	29 76	3,208 35
Farm Bull Pens and Fence	4,370 71	5	4,152 17	19 68	4,171 85
Fernald Hall	69,132 51	2	67,749 86	500 78	68,250 64
Flint Laboratory	71,045 79	2	69,624 87	448 99	70,073 86
French Hall	45,559 66	2	44,648 47	708 83	45,357 30
Goessmann Laboratory	288,299 00	2	282,533 02	1,060 54	283,593 56
Grinnell Arena	8,546 68	2	8,375 75	19 68	8,395 43
Ground Tool Shed	180 09	5	171 09	—	171 09
Harlow House	2,001 84	5	1,901 75	19 84	1,921 59
Horse Barn	4,510 52	3	4,375 20	90 59	4,465 79
Head of Division of Horticulture	3,086 15	5	2,931 84	21 02	2,952 86
Horticultural Barn	3,744 68	3	3,632 34	150 44	3,782 78
Horticultural Garage	1,488 04	3	1,443 40	—	1,443 40
Horticultural Tool Shed	5,148 72	3	4,994 26	8 34	5,002 60
Horticultural Open Shed	423 59	5	401 41	—	401 41
Horticultural Manufactures Shed	3,107 81	5	2,952 42	—	2,952 42
Hospital	15,801 64	2	15,485 61	216 95	15,702 56
Jewett House and Barn	3,237 56	5	3,075 68	10 48	3,086 16
Machinery Barn	3,241 93	3	3,144 67	245 08	3,389 75
Market Garden Field Station Greenhouse	—	—	—	—	14,000 00
Market Garden Field Station Office and Laboratory Building	—	—	—	—	8,000 00
Market Garden Field Station Farmhouse	6,000 00	5	5,700 00	—	5,700 00
Market Garden Field Station Ice House	100 00	5	95 00	—	95 00
Market Garden Field station Large Cow Barn	9,000 00	5	8,550 00	—	8,550 00
Market Garden Field Station Small Stock Barn	2,000 00	5	1,900 00	—	1,900 00
Market Garden Field station small shed	800 00	5	760 00	—	760 00
Mathematical Building	4,229 23	5	4,017 77	786 65	4,804 42
Memorial Hall	100,268 16	2	98,262 80	455 88	98,718 68
Microbiology Building	54,771 74	2	53,676 31	776 42	54,452 73
Military storage	183 77	5	174 58	—	174 58
Mount Toby House and Barn	3,232 50	5	3,070 87	55 33	3,126 20
North Dormitory	27,892 30	2	27,334 45	1,661 65	28,996 10
Paige Laboratory and Stable	23,388 45	2	22,920 68	222 42	23,143 10
Physics Laboratory	4,451 71	5	4,229 12	409 68	4,638 80
Piggery	2,717 83	3	2,636 30	5 58	2,641 88
Poultry departments:					
No. 1, Demonstration Building	2,003 74	2	1,963 67	4 86	1,968 53
No. 2. Oil House	136 52	2	133 79	16 58	150 37
No. 3. Brooder, killing and fattening laboratory	2,231 30	2	2,186 67	17 49	2,204 16
No. 4. Mechanics, storage building and incubator cellar	4,066 60	2	3,985 27	10 62	3,995 89
No. 5. Laying house	1,715 27	2	1,680 96	—	1,680 96
No. 6. Manure shed	135 40	2	132 69	—	132 69
No. 7. Small Henhouse	42 13	2	41 29	—	41 29
No. 8. Breeding House	1,434 31	2	1,405 62	—	1,405 62
No. 9. Experimental Breeding House	619 55	2	607 16	—	607 16
No. 10. Duck House	87 49	2	85 74	—	85 74
No. 11. Unit house for 200 hens	439 25	2	430 46	—	430 46
No. 12. Unit house for 100 hens	400 70	2	392 69	—	392 69

COLLEGE BUILDINGS (ESTIMATED VALUE, 1925) — Concluded.

	Inventory at Beginning of Year.	Per Cent deducted.	Value at Beginning of Year less Deterioration.	Repairs and Improvements during Year.	Total Value at Close of Fiscal Year.
Power Plant and storage buildings including Coal Pocket	\$48,902 02	2	\$47,923 98	\$384 44	\$48,308 42
President's House	13,559 15	3	13,152 38	439 46	13,591 84
Rural Engineering Building	14,760 92	2	14,465 70	35 80	14,501 50
Sheep Barn	1,523 68	3	1,477 97	11 57	1,489 54
South Dormitory	41,567 16	2	40,735 82	1,491 44	42,227 26
Stockbridge Hall	159,626 96	2	156,434 42	1,198 52	157,632 94
Agromony Greenhouse and storage	4,702 24	2	4,608 20	54 23	4,662 43
Stockbridge House	2,152 29	5	2,044 68	10 78	2,055 46
Stone Chapel	29,287 12	2	28,701 38	206 36	28,907 74
Turbine House	17,351 96	2	17,004 92	9 00	17,013 92
Vegetable Plant House	5,261 26	5	4,998 20	21 49	5,019 69
Waiting Station	539 45	2	528 66	5 38	534 04
Wilder Hall	32,018 80	2	31,378 42	101 72	31,480 14
Young stock Barns	6,396 65	3	6,204 75	71 45	6,276 20
Totals	\$1,503,710 90	—	\$1,469,588 52	\$19,192 04	\$1,511,314 60

EXPERIMENT STATION BUILDINGS (ESTIMATED VALUE).

	Inventory at Beginning of Year.	Per Cent deducted.	Cost at Beginning of Year less Per Cent Deterioration.	Repairs and Improvements during Year.	Total Value at Close of Year.
Agricultural laboratory	\$14,119 92	2	\$13,837 52	\$226 65	\$14,064 17
Agricultural barn	4,893 88	3	4,747 06	104 66	4,851 72
Agricultural farmhouse	1,888 20	3	1,831 55	20 21	1,851 76
Agricultural glasshouse	1,087 09	5	1,032 74	18 59	1,051 33
Brooks house	2,895 75	5	2,750 96	21 63	2,772 59
Brooks barn and sheds	1,353 75	5	1,286 06	2 63	1,288 69
Brooks tobacco barn	3,000 00	5	2,850 00	—	2,850 00
Cranberry buildings	2,640 88	5	2,508 84	—	2,508 84
Entomological glasshouses	555 76	5	527 97	—	527 97
Plant and Animal Chemistry laboratory	26,848 75	2	26,311 77	455 48	26,767 25
Plant and Animal Chemistry barns	5,934 66	3	5,756 62	386 44	6,143 06
Plant and Animal dairy	1,757 98	3	1,705 24	—	1,705 24
Six Poultry houses	688 75	2	674 97	—	674 97
Tillson house	948 83	5	901 39	151 08	1,052 47
Tillson barn	1,043 60	5	991 42	—	991 42
Tillson poultry houses (4), Nos. 2, 3, 4, 5	2,894 96	2	2,837 06	—	2,837 06
Tillson incubator cellar No. 1	706 18	2	692 06	—	692 06
Tillson summer sheds (3) No. 6	440 12	5	418 11	—	418 11
Tillson pullet brooder No. 7	1,121 92	5	1,065 82	—	1,065 82
Tillson hen brooder No. 8	1,168 47	5	1,110 05	2 93	1,112 98
	\$75,989 45	—	\$73,837 21	\$1,390 30	\$75,227 51

COLLEGE EQUIPMENT (ESTIMATED VALUE).

Administrative division:

Dean's Office	\$1,258 50
President's Office	2,703 00
Registrar's Office	1,119 87
Treasurer's Office	5,650 60

Agricultural division:

Agromony	8,864 50
Animal Husbandry	1,095 81
Dairy	25,440 97
Farm	23,601 95
Farm Livestock	40,243 00
Farm Management	1,080 58
General Agriculture	2,243 47
Poultry	9,260 96
Rural Engineering	10,102 46

P.D. 31.	35
Domestic Science	\$4,210 84
Dining Hall	42,470 82
Extension	15,655 37
General Science:	
Apiary	2,360 61
Botanical	26,074 36
Chemistry	30,694 21
Entomology	6,256 38
Mathematics	2,321 40
Microbiology	7,051 50
Physics	8,834 36
Veterinary	13,815 01
Zoölogy and Geology	17,660 80
Graduate School	166 25
Horticultural division:	
Floriculture	32,680 63
Forestry	1,200 49
General Horticulture	8,489 50
Grounds	2,864 32
Horticultural Manufactures	5,563 35
Landscape Gardening	6,745 92
Market-Garden Field Station	3,727 06
Mount Toby Reservation	553 96
Pomology	7,319 30
Vegetable Garden	4,010 30
Hospital	948 05
Humanities Division:	
Economics and Sociology	45 50
Language and Literature	740 00
Library	144,408 05
Military	1,987 73
Operating and Maintenance:	
College Supply	931 34
Fire Apparatus	1,640 00
General Maintenance:	
Office	777 70
Carpentry and Masonry Supplies	4,240 90
Carpentry and Masonry Tools	5,273 07
Electrical Supplies	2,759 79
Electrical Tools	237 89
Electrical Commencement Supplies	619 75
Heating and Plumbing Supplies	8,291 23
Heating and Plumbing Tools	2,569 82
Painting Supplies	1,336 25
Painting Tools	295 88
Steam Main	5,089 57
Lighting Lines	9,817 22
Janitor's Supplies	1,364 61
Sewer Line	13,480 77
Water Mains	13,439 24
Power Plant:	
General Equipment	97,473 38
Tools	296 80
Supplies	234 30
Fuel	2,883 65
Physical Education	1,823 74
Rural Social Science:	
Agricultural Economics	2,155 45
Agricultural Education	1,746 96
Rural Sociology	220 04
Short Course	3,033 95

36	P.D. 31.
Textbooks	\$3,640 50
Trophy Room	733 20
Women's Dormitory	10,359 31
Memorial Hall	14,822 00
Freshman Agriculture	223 85
Total	\$743,333 90

EXPERIMENT STATION EQUIPMENT (ESTIMATED VALUE).

Agronomy	\$382 43
Apiary	142 11
Agricultural Economics Department	515 70
Agricultural Laboratory	11,123 46
Botany	8,634 15
Cranberry Station	13,243 08
Director's Office	4,939 00
Entomological laboratory	24,632 29
Entomology at Market-Garden Field Station	258 57
Fertilizer and Feed Control	14,735 03
P and A Chemistry	18,098 68
Meteorological Observatory	635 00
Microbiological laboratory	4,088 80
Pomology	4,810 99
Poultry Department	5,931 80
Treasurer's Office	983 61
Veterinary	2,527 75
	\$115,682 45

INVENTORY — REAL ESTATE.

Land (Estimated Value).

Angus Land	\$800 00
Allen Place	500 00
Baker Place	2,500 00
Bangs Place	2,350 00
Brooks Farm	11,000 00
Brown Land	500 00
Charmbury Place	450 00
Clark Place	4,500 00
College Farm	37,000 00
Cranberry Land	12,745 00
George Cutler Jr., Trustee	2,700 00
Dickinson Land	7,850 00
Harlow Farm and Orchard	3,284 63
Hawley and Brown Place	675 00
Kellogg Place	3,368 45
Loomis Place	415 00
Louisa Baker Place	5,000 00
Market-Garden Field Station	21,000 00
Mount Toby demonstration forest	30,000 00
Newell Farm	2,800 00
Old Creamery Place	1,000 00
Owen Farm	5,000 00
Pelham Quarry	500 00
Tillson Farm	2,950 00
Westcott Place	2,250 00
	\$161,138 08

Summary.

Land	\$161,138 08
College buildings	1,511,314 60
College equipment	743,333 90
Experiment Station buildings	75,227 51
Experiment Station equipment	115,682 45
Total	\$2,606,696 54

Acres.

College estate (area)	702.19
Cranberry Station, Wareham (area)	23.67
Market-Garden Field Station, Waltham (area)	55.39
Mount Toby demonstration forest (area)	755.27
Rifle range	46.20
Pelham quarry	50
Total acreage	1,583.22

DINING HALL STATEMENT NOVEMBER 30, 1925.

Balance December 1, 1924	\$9,911 07	
Total Disbursements	127,017 04	
Outstanding Bills November 30, 1925	3,861 43	
Total Collections		\$123,786 55
Outstanding Accounts:		
Board		1,393 58
Special Service		336 58
Inventory November 30, 1925		12,461 95
Balance		2,810 88
	\$140,789 54	\$140,789 54

BURNHAM EMERGENCY FUND.

	Market Value Dec. 1, 1925.	Par Value.	Income.
Two bonds American Telephone and Telegraph Company 4s at \$97	\$1,940 00	\$2,000 00	\$60 00
Two bonds Power Corporation of N. Y. 6½s at \$104	2,080 00	2,000 00	130 00
One United States Liberty Bond 4½s \$102	510 00	500 00	21 25
One bond Ohio Service Company 6s \$100	500 00	500 00	30 00
	\$5,030 00	\$5,000 00	\$261 25
Unexpended balance December 1, 1924	—	—	322 40
	—	—	\$583 65
Disbursements for fiscal year ending November 30, 1925	—	—	331 25
	—	—	\$252 40
Cash on hand November 30, 1925	—	—	\$252 40

LIBRARY FUND.

Five bonds New York Central & Hudson River Railroad Company 4s at \$94	\$4,700 00	\$5,000 00	\$200 00
Five bonds Lake Shore and Michigan Southern Railroad Co., 4s at \$98	4,900 00	5,000 00	200 00
Two shares New York Central Railroad Stock at \$128	256 00	200 00	14 00
Amherst Savings Bank deposit	175 52	175 52	7 77
	\$10,031 52	\$10,375 52	\$421 77
Winchester store	—	—	2 95
	—	—	\$424 72
Disbursements for fiscal year ending November 30, 1925	—	—	424 72

SPECIAL FUNDS.

Endowed Labor Fund (the Gift of a Friend of the College).

	Market Value Dec. 1, 1925.	Par Value.	Income.
Two bonds American Telephone and Telegraph Company 4s at \$97	\$1,940 00	\$2,000 00	\$80 00
Two bonds Lake Shore & Michigan Southern Railroad Co., 4s at \$98	1,960 00	2,000 00	80 00
One bond New York Central Railroad Gold debenture 4s	1,280 00	1,000 00	40 00
One bond Ohio Service Company 6s	1,000 00	1,000 00	60 00
Amherst Savings Bank deposit	1,143 39	1,143 39	25 24
One bond Indiana Hydro Electric Co. 6s	990 00	1,000 00	60 00
Unexpended balance December 1, 1924	\$8,313 39	\$8,143 39	\$345 24
Disbursements for fiscal year ending November 30, 1925	—	—	\$1,327 46
Cash on hand November 30, 1925	—	—	1,201 25
			\$126 21

Whiting Street Scholarship Fund.

One bond New York Central & Hudson Railroad Gold Debenture 4s	\$940 00	\$1,000 00	\$40 00
Amherst Savings Bank deposit	771 64	771 64	21 69
Unexpended balance Dec. 1, 1924	\$1,711 64	\$1,771 64	\$61 69
Disbursements for fiscal year ending November 30, 1925	—	—	\$721 98
Cash on hand November 30, 1925	—	—	500 00
			\$221 98

Hills Fund.

One United States Liberty Bond 4½s	\$1,020 00	\$1,000 00	\$42 50
One bond American Telephone and Telegraph Company 4s	970 00	1,000 00	40 00
One bond New York Central & Hudson River Railroad debenture 4s	940 00	1,000 00	40 00
Three bonds Pacific Telephone and Telegraph Company 5s at \$101	1,280 00	1,000 00	40 00
One Penn. Public Service Corporation 6s	3,030 00	3,000 00	150 00
Boston & Albany Railroad stock 3½ shares at \$160	1,000 00	1,000 00	60 00
Amherst Savings Bank deposit	580 00	362 00	31 68
Electric Securities Company bonds 1 9/50 bonds at \$94	2,572 75	2,572 75	50 16
One bond Great Western Light & Power Company 5½s	1,109 20	1,180 00	59 00
One bond American Gas & Electric Co. 6s	1,000 00	1,000 00	—
One bond Potomac Edison Company 6½s	980 00	1,000 00	—
Unexpended balance December 1, 1924	\$15,511 95	\$15,114 75	\$578 34
Great Western Light and Power Co. 6s	—	—	2,618 88
Earnings from exchange of bonds	—	—	120 00
Disbursements for fiscal year ending November 30, 1925	—	—	27 50
Cash on hand November 30, 1925	—	—	\$3,344 72
			2,885 56
			\$459 16

Mary Robinson Fund.

Amherst Savings Bank deposit	\$142 00	\$142 00	\$6 45
Boston & Albany R.R. Stock 3/8 share at \$160	60 00	38 00	3 32
Electric Securities Co. 41/50 bond at \$94	770 80	820 00	41 00
Unexpended balance December 1, 1924	\$972 80	\$1,000 00	\$50 77
Cash on hand November 30, 1925	—	—	241 15
			\$291 92

Grinnell Prize Fund.

Ten shares New York Central stock at \$128	\$1,280 00	\$1,000 00	\$70 00
Unexpended balance December 1, 1924	—	—	302 64
Disbursements for Prizes	\$1,280 00	\$1,000 00	\$372 64
Cash on hand November 30, 1925	—	—	50 00
			\$322 64

Gassett Scholarship.

	Market Value Dec. 1, 1925.	Par Value.	Income.
One bond New York Central & Hudson River Railroad debenture 4s	\$940 00	\$1,000 00	\$40 00
Amherst Savings Bank deposit	511 64	511 64	9 85
	\$1,451 64	\$1,511 64	\$49 85
Unexpended balance December 1, 1924	—	—	506 74
	—	—	\$556 59
Disbursements for fiscal year ending November 30, 1925	—	—	500 00
	—	—	\$56 59
Cash on hand November 30, 1925	—	—	

Massachusetts Agricultural College (Investment).

One share New York Central Railroad stock \$128	\$1,280 00	\$100 00	\$7 00
Unexpended balance December 1, 1924	—	—	126 14
	\$1,280 00	\$100 00	\$133 14
Cash on hand November 30, 1925	—	—	

Danforth Keyes Bangs Fund.

Two bonds Pacific Telephone and Telegraph Company 5s at \$101	\$2,020 00	\$2,000 00	\$100 00
Two bonds Union Electric Light & Power Company 5s at \$100	2,000 00	2,000 00	100 00
Two bonds American Telephone and Telegraph Company 4s at \$97	1,940 00	2,000 00	80 00
One bond Indiana Hydro-Electric Power Company 6s	990 00	1,000 00	30 00
Interest from Student Loans	—	—	130 60
	\$6,950 00	\$7,000 00	\$440 60
Unexpended balance December 1, 1924	—	—	2,219 34
Oklahoma Gas & Electric Co.	—	—	30 00
Earnings from exchange of bonds	—	—	23 93
	—	—	\$2,713 87
Total loans made to students during fiscal year, \$3,933.75	—	—	—
Cash received on account of student loans, \$2,959.50	—	—	—
Excess of loans made over accounts paid by students	—	—	974 25
	—	—	\$1,739 62
Cash on hand November 30, 1925	—	—	

John C. Cutter Fund.

One bond Pacific Telephone and Telegraph Company 5s	\$1,010 00	\$1,000 00	\$50 00
Unexpended balance December 1, 1924	—	—	91 34
	\$1,010 00	\$1,000 00	\$141 34
Disbursements for fiscal year ending November 30, 1925	—	—	23 98
	—	—	\$117 36
Cash on hand November 30, 1925	—	—	

William R. Sessions Fund.

Five shares New York Central Railroad stock at \$128	\$640 00	\$500 00	\$26 25
Three United States Liberty bonds, two at \$1,000; one at \$500, 4½s at \$102	2,550 00	2,500 00	106 25
One bond Adirondack Light & Power Company 6s	1,040 00	1,000 00	60 00
One bond Southern Illinois Light & Power Company 6s	1,020 00	1,000 00	60 00
	\$5,250 00	\$5,000 00	\$252 50
Unexpended balance December 1, 1924	—	—	158 84
	—	—	\$411 34
Disbursements for fiscal year ending November 30, 1925	—	—	339 93
	—	—	\$71 41
Cash on hand November 30, 1925	—	—	

Alvord Dairy Scholarship Fund.

One United States Liberty Bond 4½s	\$1,020 00	\$1,000 00	\$42 50
One bond Southern Illinois Light & Power Company 7s	1,030 00	1,000 00	70 00
Two bonds Great Western Power Company 5½s at \$100	2,000 00	2,000 00	—
Amherst Savings Bank deposit	1,000 00	1,000 00	18 75
	\$5,050 00	\$5,000 00	\$131 25
Unexpended balance December 1, 1924	—	—	1,095 11
Great Western Power Company 6s	—	—	120 00
Earnings from exchange of bonds	—	—	20 00
	—	—	\$1,366 36
Disbursement for fiscal year ending November 30, 1925	—	—	1,152 00
	—	—	\$214 36
Cash on hand November 30, 1925	—	—	

J. D. W. French Fund.

	Market Value Dec. 1, 1925.	Par Value.	Income.
Two bonds Southern Illinois Light & Power Company 6s at \$102	\$2,040 00	\$2,000 00	\$120 00
Two bonds Great Western Light & Power Company 5½s at \$100	2,000 00	2,000 00	—
Four bonds Penn. Public Service corporation, two 6½s at \$103, two 6s at \$100	4,060 00	4,000 00	250 00
Two bonds Ohio Service Company 6s at \$100	2,000 00	2,000 00	120 00
Amherst Savings Bank	500 00	500 00	9 38
	\$10,600 00	\$10,500 00	\$499 38
Unexpended balance December 1, 1924	—	—	926 12
Great Western Light & Power Company 6s	—	—	120 00
Earnings from exchange of bonds	—	—	20 00
	—	—	\$1,565 50
Disbursements for fiscal year ending November 30, 1925	—	—	1,267 58
	—	—	\$297 92
Cash on hand November 30, 1925	—	—	

Students' Loan Fund of the Massachusetts Agricultural Club.

First National Bank	\$500 00	\$500 00	—
Total loans to students	—	500 00	—
	—	—	—
Interest from loans	—	—	\$16 36
	—	—	\$16 36
Cash on hand November 30, 1925	—	—	

F. G. Crane Fund.

Five bonds Ohio Service Company 6s at \$100	\$5,000 00	\$5,000 00	\$300 00
Two bonds Power Corporation of New York 6½s at \$104	2,080 00	2,000 00	130 00
Four bonds Potomac Edison Company 6½s at \$103	4,120 00	4,000 00	260 00
Four bonds Northern New York Utilities 6s at \$101	4,040 00	4,000 00	240 00
Five bonds Penn. Public Service Corporation 6½s at \$103	5,150 00	5,000 00	325 00
Five bonds Illinois Power & Light Corporation 6s at \$101	5,050 00	5,000 00	300 00
Amherst Savings Bank	250 00	250 00	11 35
	\$25,690 00	\$25,250 00	\$1,566 35
Unexpended balance December 1, 1924	—	—	615 57
Interest on loans	\$0 63	—	—
Cash received on loans	50 00	—	—
	—	—	50 63
Scholarship to students Cash	—	—	\$2,232 55
Loans	—	—	—
	—	—	1,075 00
Cash on hand November 30, 1925	—	—	\$1,157 55

SUMMARY OF BALANCE ON HAND OF THE INCOME FROM FUNDS HELD IN TRUST
BY THE M. A. C.

Burnham Emergency Fund	\$252 40
Endowed Labor Fund	126 21
Whiting Street Scholarship Fund	221 98
Hills Fund	459 16
Mary Robinson Fund	291 92
Grinnell Prize Fund	322 64
Gassett Scholarship	56 59
Massachusetts Agricultural College Investment Fund	133 14
Danforth Keyes Bangs Fund	1,739 62
John C. Cutter Fund	117 36
Alvord Dairy Scholarship Fund	214 36
J. D. W. French Fund	297 92
Massachusetts Agricultural Club Fund	16 36
William R. Sessions Fund	71 41
F. G. Crane Fund	1,157 55
	\$5,478 62

HISTORY OF SPECIAL FUNDS.

Burnham Emergency Fund. — A bequest of \$5,000 from T. O. H. P. Burnham of Boston made without any conditions. The Trustees of the College have used this fund in any cases of emergency where funds were not available. At present the fund is intact and the income only has been used for such emergency matters as the Trustees have authorized. The fund now shows an investment of \$5,000.00.

Library Fund. — The library of the college at the present time contains 75,066 volumes. The income from the fund raised by the alumni and others is devoted to its increase, and additions are made from time to time as the needs of the different departments require. Dec. 27, 1883, William Knowlton gave \$2,000; Jan. 1, 1894, Charles L. Flint gave \$1,000; in 1887, Elizur Smith of Lee, Mass., gave \$1,315. These were the largest bequests and now amount to \$10,375.52.

Endowed Labor Fund. — Gift of a friend of the college in 1901, income of which is to be used for the assistance of needy and deserving students, \$5,000.00.

Whiting Street Scholarship Fund. — Gift of Whiting Street of Northampton, for no special purpose, but to be invested and the income used. This fund is now used exclusively for scholarship, \$1,000.00.

Hills Fund. — Gift of Leonard M. and Henry F. Hills of Amherst, Mass., in 1867, to establish and maintain a botanic garden, \$10,000.00.

Mary Robinson Fund. — Gift of Miss Mary Robinson of Medfield, in 1874, for scholarship, \$1,000.00.

Grinnell Prize Fund. — Gift of Hon. Wm. Claflin, to be known as the Grinnell agricultural prize, to be given to the two members of the graduating class who may pass the best oral and written examination in theory and practice of agriculture, given in honor of George B. Grinnell of New York, \$1,000.00.

Gassett Scholarship Fund. — Gift of Henry Gassett of Boston, the income to be used for scholarship, \$1,000.00.

Massachusetts Agricultural College Investment Fund. — Investment made by vote of trustees in 1893 to purchase one share of New York Central & Hudson River Railroad stock. The income from this fund has been allowed to accumulate, \$100.00.

Danforth Keyes Bangs Fund. — Gift of Louisa A. Baker of Amherst, Mass., April 14, 1909, the income thereof to be used annually in aiding poor, industrious, and deserving students to obtain an education in said college, \$6,000.00.

John C. Cutter Fund. — Gift of Dr. John C. Cutter of Worcester, Mass., an alumnus of the college, who died in August, 1909, to be invested by the trustees, and the income to be annually used for the purchase of books on hygiene, \$1,000.00.

Alvord Dairy Scholarship Fund. — Gift of Henry E. Alvord, who was the first instructor in military tactics, 1869-71, and a professor of agriculture, 1885-87, at this institution. The income of this fund is to be applied to the support of any worthy student of said college, graduate or postgraduate, who may be making a specialty of the study of dairy husbandry (broadly considered) with the intention of becoming an investigator teacher or special practitioner in connection with the dairy industry, provided that no benefits arising from such fund shall at any time be applied to any person who then uses tobacco in any form, or fermented or spirituous beverages, or is known to have done so within one year next preceding, \$4,000.00.

William R. Sessions Fund. — In accordance with the request of my deceased wife, Clara Markham Sessions, made in her last will, I bequeath to the trustees of the Massachusetts Agricultural College, Amherst, Mass., the sum of \$5,000, it being the amount received by me from the estate of the said Clara Markham Sessions. The said \$5,000 to be kept by the said trustees a perpetual fund, the income from which shall be for the use of the Massachusetts Agricultural College; and according to the further request of my deceased wife, made in her last will, this is to be known as the William R. Sessions fund, and is to be a memorial of William R. Sessions; and it is my special request that the said trustees shall make record of the fact that this fund came from the estate of my deceased wife Clara Markham Sessions, in accordance with her request made in her last will, \$5,000.00.

J. D. W. French Fund. — Gift of the Bay State Agricultural Society of Boston Mass. This fund to be known as the J. D. W. French Fund, and the Trustees of

the Massachusetts Agricultural College are to use the income of this fund where it will do the greatest good, in the interest of Dairying and its allies, also in Forestry, as scholarships, loans, or prizes; especially, however, to help pay the expenses of the judging teams to the National Dairy Show and to the National Livestock Show, \$10,000.00.

Frederick G. Crane Fund. — Gift of Frederick G. Crane of Dalton, Massachusetts. The income of this fund is to be expended by the Trustees of the Massachusetts Agricultural College in aid of worthy undergraduate students of limited financial resources at the college, preference being given to residents of Berkshire County; such payments are to be known as the Frederick G. Crane Scholarships, \$25,000.00.

Massachusetts Agricultural College Fund. — The Massachusetts Agricultural Club gave \$500 to be used as a scholarship fund to the Massachusetts Agricultural College to help out deserving students there, who intended seriously to go into agriculture, interest on loans not to be charged until after graduation, \$500.00.

Total of special funds, \$85,975.52.

FRED C. KENNEY,

Treasurer.

MASSACHUSETTS AGRICULTURAL COLLEGE

THE SIX WEEKS' SUMMER SCHOOL

JULY 6—AUGUST 14

1926



THE M. A. C. BULLETIN Amherst, Mass.

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 MRS. A. J. HOPKINS (MARGARET SUTTON BRISCOE), *Special Lecturer.*

Ten Suggestions for Teachers Attending '26 Summer School

(From the Journal of the National Education Association)

Consider attending a summer school which offers a complete change of scene and climate. The rural teacher will perhaps enjoy the attractions which a large city offers; the city teacher may prefer the summer course given on the coast or in the mountains.

2. Secure summer session catalogues from a number of institutions as soon as they are issued.

3. Study summer session catalogues to find which university or college offers courses in which you are most interested; what outstanding leaders are conducting courses in your field, and what prerequisites are required for these courses.

4. If the membership in a particular class in which you expect to enroll is limited to a small number, mail your application for enrollment in this class as early as possible before registration.

5. Write early for information concerning living quarters. Don't waste the first week of summer school hunting for a place to live.

6. Select one or two courses that will be of greatest help to you in your particular work next year. Consider taking at least one course that is purely avocational. Register for a play course, learn to swim, or renew your pleasure in tennis, etc.

7. Register for a reasonable amount of work. Change of work is a vacation, but overwork is not.

8. Make contacts with people whom you will enjoy knowing. Receptions, outings and parties are planned especially for summer school students. Show your appreciation by attending and having a good time.

9. If you are working toward a college degree ascertain whether the courses you are going to take meet the requirements which you think they do.

10. Work hard but have a good time; store up life enthusiasms.

GENERAL ANNOUNCEMENT

Organization. — The nineteenth session of the summer school at the Massachusetts Agricultural College will begin July 6 and continue until August 14 inclusive. With the exception of the preparatory courses intended for students planning to enter college in the fall, only graduate and undergraduate work will be offered.

Admission. — There are no formal examinations for admission to the summer session. Students, both men and women, will be admitted to such courses as the instructors in respective courses find they are qualified to pursue with advantage.

The summer school program is arranged for:

1. School superintendents and teachers connected with high schools, normal schools, colleges and universities who seek advanced instruction either with or without relation to an academic degree.
2. College students who desire to further their regular college work.
3. Teachers who desire to pursue courses that will better prepare them for their work.
4. Graduates of high schools who are planning to enter college in the fall and who have not the required number of entrance units.
5. Any serious student who finds in the summer school bulletin courses suited to his preparation and needs.

Registration. — Classes will begin promptly at 8 A.M. Wednesday, July 7, and will be held as announced in the description of courses until Friday, August 13, inclusive. Classes will be held Saturday, July 10.

Students who are not candidates for a degree at the Massachusetts Agricultural College and who do not intend to become a candidate for such a degree during the coming summer and students previously enrolled as candidates for a degree in the Massachusetts Agricultural College may register by mail prior to June 27 or in person on Tuesday, July 6.

The hours of registration are from 9 A.M. to 5 P.M. Students arriving in Amherst on these dates and between these hours should report immediately at the office of the Director of Short Courses in South College (telephone 424), where full information may be had as to board, rooms, registration, etc.

Students intending to enroll for the first time this summer for work to be credited toward a degree at the Massachusetts Agricultural College should register in person on or before Tuesday, July 6. Such students should correspond with the Dean or the Registrar of the College.

Students who do not wish definitely to enroll at this time for a degree may later present the work done for credit toward a degree when the regular conditions of college matriculation and registration for a degree have been met.

Registration of Graduate Students. — Graduate students who are not candidates for an advanced degree in the college are not required to file records of past training but should consult the Director of the Graduate School and secure his permission before registering for any courses. Such students will receive from the Director of the Graduate School upon request a statement of the work completed in the Summer Session. Graduate students who wish credit at the Massachusetts Agricultural College must meet the requirements of the graduate school.

Admission. — Admission to the graduate school will be granted: —

1. To graduates of the Massachusetts Agricultural College.
2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this college.

In case an applicant presents his diploma from an institution of good standing, but has not, as an undergraduate, taken as much of the subject he selects for his major as is required of undergraduates at the Massachusetts Agricultural College, he will be required to make up such parts of the undergraduate work in that subject as the instructor in charge may consider necessary. He shall do this without credit toward his advanced degree.

Admission to the graduate school does not necessarily admit to candidacy for an advanced degree, — students holding a bachelor's degree being in some cases permitted to take graduate work without becoming candidates for higher degrees.

Applications for membership in the graduate school should be presented to the director of the school. Full statements of the applicant's previous training, of the

graduate work desired, and of the amount and kind of work already done by him as an undergraduate should be submitted, together with a statement whether the applicant desires to work for a degree.

Registration is required of all students taking graduate courses, the first registration being permitted only after the student has received an authorization card from the director.

Change of Program. — Regular exercises will begin promptly on July 7. Notice of any proposed addition or cancellation of courses must be reported at once in person at the office of the Director of the Summer Session. Students will be allowed after securing the consent of the Director to make such additions or cancellations up to and including July 10. After July 10 they will be permitted to make no changes whatever. A student attending any course is required to do the full work assigned to the class. The college reserves the right to withdraw any undergraduate or preparatory courses not taken by at least five students.

Credits. — All courses are measured in terms of credit units. A credit is earned by carrying a course that meets two hours a week throughout a term of six weeks. In accordance with this definition a course which meets five hours a week for a term of six weeks would count as two and one-half credits. As a rule two hours of laboratory work are considered the equivalent of one hour of lecture or recitation. The total amount of collegiate credit which may be earned can not exceed $7\frac{1}{2}$ term credits; for graduate credits a maximum of ten are allowed.

Housing for Women Students. — The new women's dormitory is available for women students. There are thirty double and thirty-eight single rooms. A uniform rate of \$3.00 per week will be charged each student. *Each one will be required to supply her own blankets, sheets, pillow cases, etc.* Convenient arrangements for laundry work may be made in Amherst. *Students taking rooms in the dormitory must conform to dormitory regulations.* Observance of these regulations is one of the conditions under which the rooms are rented and failure to comply with the regulations will mean a surrender of the room and a forfeiture of the amount paid. A student whose conduct is not satisfactory may be asked to withdraw from the dormitory.

All requests for dormitory rooms must be made to the Treasurer of the college. A deposit of \$3 is required in order to secure a reservation in the dormitory. Students will be notified by the Treasurer, upon receipt of the fees, as to the location of the room. In case any change is desired, the request should be made immediately. Deposits will not be refunded after the beginning of the summer session. The deposit is applied to total payment for the room at registration.

Cost of Living. — Comfortable rooms can be secured at moderate prices in private homes as follows:

Single room \$3.00—\$4.00 per week; double rooms or suites for two persons \$2.00—\$3.00 per person; board \$7.00 per week and up. A list of rooms available in the village will be furnished to summer school students at the time of registration. Every effort will be made by those in charge to see that every one has comfortable accommodations.

The college maintains a cafeteria on the self-service plan in Draper Hall, on the college grounds. Board may be had at from \$6.00 to \$8.00 per week. Good boarding places can also be secured outside of the college if desired.

Recreation. — The Summer Session offers many advantages. Amherst is a quiet college town located in the beautiful Connecticut Valley. The living conditions are excellent and especially desirable for students who wish to spend a part of the summer in study in restful surroundings. The social life of the Summer School is attractive. A series of informals, Saturday excursions, lectures, entertainments and picnics have been arranged. There are many attractive places, groves, brooks, woods, picnic grounds near Amherst easily accessible. A new dormitory provides comfortable accommodations for women students. For men students rooms near the college may be had.

Golf. — Amherst has a fine nine-hole course and privileges are extended to summer school students at a special rate of \$6.00 for the six weeks. Cards should be secured at Treasurer's Office.

Tennis. — There are many fine tennis courts available for summer school students.

Swimming. — It is expected that the Amherst College Physical Education Department will conduct summer swimming classes in its finely equipped pool.

Informals. — At regular intervals through the session informal social gatherings will be held in the Memorial Building. It is the desire of the committee to provide recreational and social life on the campus so long as it does not interfere with the regular collegiate work. Every effort will be made to give those in attendance an enjoyable summer. The college campus and the surrounding country is particularly adapted for recreational life.

A reception to all summer school students will be held in the Memorial Building Friday evening, July 9. Secure tickets at Short Course Office for all summer school social affairs.

Classes are not so large but that the student may have personal attention from the instructor. The instruction will be given by regular members of the college staff assisted by outside specialists.

Tuition, Fees and Expenses. — Tuition is free for residents of the Commonwealth of Massachusetts. Non-resident students must pay a tuition fee of thirty dollars for the summer session.

The total estimated expenditure for attendance at the summer session need not exceed: Board for six weeks, \$42.00; Room rent six weeks, \$18.00; Books, \$5.00; Laundry — incidentals.

Beginning with the 1927 Summer School there will be a small tuition fee charged to all students residing in the State.

Assemblies. — A student assembly is held once a week on Monday, from 7.00 to 8.00 P.M. At this assembly the notices of the summer session are given, reports of social and other committees made and other business of interest to the student body is transacted.

Rules and Regulations. — As a guide to those who come to the College for the first time, the following extracts are taken from the regular rules of the College: —

The customary high standard of college men and women in honor, manliness, self-respect, and consideration for the rights of others constitutes the standard of student deportment.

It should be understood that the College, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend but also to name conditions under which students may remain in the institution.

It is the custom of the College that all socials should first have the approval of some recognized College authority.

The College. — The College campus occupies an attractive site three-quarters of a mile north of Amherst center. It is connected with the town and the railway station by electric car service. The College has over 700 acres of land, most of which is in a high state of cultivation, and illustrates most of the leading agricultural industries of Massachusetts. There is a large range of greenhouses of the most modern and approved type; there is a modern dairy barn with a large herd of pure-bred cattle; there are good horses, pure-bred swine, sheep, and poultry; there are fields of corn, potatoes, clover, and grass in season; orchards of apple, peach, plum, and pear trees; tracts of good forest land, nurseries, and market gardens. There are also considerable tracts devoted to experiments, many of which are of unusual interest. Then there are well-equipped departments of botany, entomology, and chemistry, dealing in the most thorough manner with these special sciences. The advantages of the plant, equipment, and teaching staff are made available to Summer School students.

The Library. — The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the College. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of

other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences, connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers are regularly taken and both the current numbers and the back files are readily accessible.

The Library is believed to rank with the best of its kind.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Short Course Students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this material. The librarian and library assistants are always on hand, ready and anxious to help.

SPECIAL LECTURE COURSE

by

Mrs. A. J. Hopkins
(Margaret Sutton Briscoe)

These lectures will be held at the time of the regular
summer school assembly each week.

SIX LECTURES

on

THE ROYAL GAME OF SELF-CULTIVATION

- I. "My Editors of the Nineties"
A look backward into Editorial Sanctums and other sacred literary precincts.
- II. "What is a Book?"
Why was it begun? Why ended? — and where?
- III. "Self Expression"
The seeing eye; the hearing ear; the building of a language.
- IV. "The Universal Tool-Chest"
How to use a dictionary, a pencil, a rubber. Pockets and what to keep in them.
- V. "The Crafty Reader"
On the trail of the Writer. The acid test of plot, of character. Detecting technique and the use of devices.
- VI. "The Unspoken Word"
On some uproarious silences; on implications; overtones, undertones; on connotations that speak, and on word magic.

NOTE: Mrs. Hopkins will be available for conferences with groups from 8 to 8.20 after lectures. Individual conferences by appointment through the office of the Director.

COLLEGIATE COURSES

Graduate Studies. — Graduate work is available during any term of the year; in the summer quarter, however, special arrangements must be made with the head of the department in which the student plans to take work.

With the exception of courses 51 and 55 all courses included under "Courses in Education" are available for graduate credit.

The following table indicates the courses in this catalog by number, which may be taken for graduate credits, with the corresponding graduate school course numbers and credits carried.

Courses in Education

<i>Undergraduate Numbers:</i>	<i>Graduate Numbers:</i>
No credit for No. 51 and No. 55	
No. 52 (with extra work 1-10 credits)	No. 100 (No. 52 1-10 credits)
No. 56 (" " " 1-10 ")	No. 104
No. 75 (" " " 1- 7 ")	No. 105
No. 76 (" " " 1-10 ")	No. 110
No. 79 (no extra work 1- 7 ")	No. 115 (No. 76 1-10 credits)
No. 95 (with extra work 1-10 ")	No. 120 (No. 79 1- 7 ")
No. 93 (Summer School	No. 125 (No. 75 1- 7 ")
only (no extra	No. 130 (No. 56 1-10 ")
work) Experi-	No. 135 (No. 95 1-10 ")
mental Psychology 3 ")	No. 140 (No. 93 3 ")
	No. 145
	No. 200 (Thesis 15-25 ")

Courses in Science

No. 181	No. 181
No. 190	No. 190
Nos. 110-130-180	Nos. 110-130-180

COURSES IN EDUCATION

The courses indicated here are intended primarily for those who are engaged in teaching or who are preparing to teach. Some of them are of value as general courses for those not having this particular objective. Opportunity is offered for both undergraduate and graduate work. Our experience indicates that these opportunities are appreciated by undergraduate students who are pursuing work toward a degree. Through the co-operation of the State Department of Education the College is able to offer special advantages in training in the field of secondary school teaching and vocational teaching. In this co-operation R. O. Small, Director of Vocational Education, F. W. Morse, Supervisor of Secondary Education; R. W. Stimson, Supervisor of Agricultural Education and possibly others will participate.

51. Principles and Methods of Teaching. — Consists of a study of general principles of teaching and school management applied to particular "cases" taken from actual experience in public school work. Discussions of rational solutions of these "cases" tend to fix the ideas in methods. Certain assigned and optional readings are required. These are both technical and inspirational in character and cover the best there is printed on the subject of methods of teaching. They are supported by sharp class discussions of the main issues. Exercises in teaching under supervision are also required with criticism and discussions of methods and results. A basic text is used. 10 class hours. Credit 5. *Professor Welles.*

52. History of the Philosophy and Practise in Education. — A study of the development of philosophical ideas and movements and their relation to educational theory and practice. The relation between the fundamental aspects of the history of education and the significant factors in the history of civilization is stressed. 10 class hours. Credit 5. *Professor Glick.*

55. Introduction to General Psychology. — (Offered in Summer School of 1927.) A study of the mind and how it works. The principal operations such as instincts, perception, imagination, reasoning, emotions, etc., are explained in their relation to every day life and lead to brief considerations of mental evolution, mental disorders, mental telepathy, dreams, hypnotism, mental hygiene and other mental phenomena. This course is intended to lay the foundation for further study in psychology as well as a practical and cultural course for those who can take only one course in this field. 10 class hours. Credit 5.

56. Educational Psychology. — The principles of psychology, such as perception, memory, imagination, reasoning, instincts, etc., are applied to the problems of education including consideration of the original nature of the child, individual differences, psychology of learning, transfer of training, etc. This is a basic course for both general and specific methods. 10 class hours. Credit 5. *Professor Selzer.*

66. Methods of Teaching Junior and Senior High School Mathematics. — The reorganized mathematics of the seventh to twelfth school years. The aims of instruction. The subject matter. Methods of instruction. Evaluation of the results of teaching. 5 class hours. Credit 2½. *Mr. Barber.*

67. Content and Methods in Community Civics (Junior High School). — This course includes a survey of the relation of the work in social studies in the earlier grades and also in the senior high school with that in the junior high school.

The work of the ninth grade dealing with community civics and community activity will be stressed. The use of the project method and the socialized recitation in conducting classes of pupils of the junior high school age will be considered. Especial attention will be given such classroom helps as charts, posters, pictures and other means of visualization, also to material available for local needs. Emphasis will be placed throughout upon the methods of teaching the responsibilities as well as the benefits resulting from citizenship. 5 class hours. Credit 2½. *Mr. Kidger.*

68. Content and Methods in Social Studies in Senior High School. — This course considers the place, content and method of teaching social studies in the senior high school. A study of the content and method to be followed in "A Study of Nations" will be made. The interrelation of geography, history and civics will be emphasized. Especial attention will be given to not merely the most effective methods in presenting American History but also in dealing with Problems of Democracy. The objectives to be sought and the various values will be discussed. A consideration of measurements and effective methods of testing, the use of outside reading, maps, charts, diagrams, note books and other aids will be dwelt upon. The ultimate aim of stressing and inculcating good citizenship will be a prominent part of the course. 5 class hours. Credit 2½. *Mr. Kidger.*

75. Principles of Secondary Education. — (Offered in the Summer School of 1927.) A study of the American high school, both junior and senior. This course considers mostly those factors of student characteristics and subject values that must go together as the basis of successful teaching in a high school. 6 class hours. Credit 3. *Professor Welles, Mr. Small and Mr. Morse.*

76. Special Methods in Teaching Vocational Agriculture. — The work consists of outlining lessons and projects for the teaching of agriculture or related subjects in agricultural schools or departments; the application of principles of vocational education as embodied in the Smith-Hughes Act and other legislation relative to agricultural education; the necessary adjustments relating to the school, community and administrative officials. (Students electing this course should not elect Course 103.) Undergraduates must secure the consent of Professor Welles before enrolling. 10 class hours. Credit 5. *Professor Welles and Mr. Heald.*

79. Tests and Measurements. — A critical study is made of the development, theory, use, application, etc., of the various types of mental tests and measurements with emphasis upon their function in the schools. Practice is given in the administration and scoring of tests. Modern statistical methods are applied to the interpretation of results. 4 class hours. 2 laboratory hours. Credit 3. *Professor Glick.*

80. Supervised Teaching. — This course offers an opportunity for a very limited number of undergraduate students to secure the advantages of a term of apprentice teaching during the summer in schools that carry summer work in agriculture, summer science, project supervision and boys' clubs. Consult Professor Welles, for detailed information. Credits 1-5.

88. Supervision and Administration of Secondary Education. — A study of the American high school, both junior and senior. The course considers the aims and functions of the high school, its curriculum, schedules, extra curricular activities and other factors contributing to successful supervision and administration. 6 class hours. Credit 3. *Professor Welles, Mr. Small and Mr. Morse.*

93. Experimental Psychology. — Demonstrations are made of the apparatus and methods of experimental psychology. Experiments are performed by members of the class. Statistical treatment is applied to the experimental data. The objective of the course is to develop scientific observation of human behavior. 6 class hours. Credit 3. *Professor Selzer.*

95. Modern Trend in Educational Philosophy. — (Offered in Summer School of 1927.) A general survey of present philosophical theories and tendencies with special emphasis upon their significance in determining present educational objectives and practices. Credit 3.

103. The Employed Teacher of Agriculture. — A seminar course primarily for employed teachers and directors of vocational agriculture. Prospective candidates may be admitted by special arrangement. The course deals with problems which grow out of the experiences of Massachusetts teachers of vocational agriculture. It presupposes some acquaintance with the essentials of Course 51, "General Methods," which, while not required as prerequisite, might well be taken parallel with if not previous to this course. Constructive assignments bearing upon the individual experiences and prospects of the members of the class are merged with the campaigns under way for better teaching in agricultural schools. "Summer Teaching," "Project Work and Project Study," "Courses and Plans in Use," "Departmental Relationships" are among the topics developed by the entire group. No student should elect both Special Methods (Course 76) and this course during the same term.

It is desirable that, by previous correspondence, a plan may be developed with reference to individual problems and the instructor will recommend some definite data relating to the problem to be secured before the summer school opens. 10 class hours. Credit 5. *Mr. Heald.*

104. Vocational Education. — A study of the laws, rulings and policies in Federal and State supported vocational education in the United States. The philosophy and experiences leading to the legislation and the evolution, especially in Massachusetts since 1906 of a well defined body of practice. The types of work involved, the occupations represented, the administration and supervisory problems, standards set, approval factors, machinery necessary and dangers to be avoided. Day schools, part-time and continuation schools, evening schools. Relation to other secondary education. While leaning toward the agricultural field this course avoids the specific phase treated in the "Methods" courses. Mr. R. O. Small, Director of Vocational Education, and Mr. R. W. Stimson, Supervisor of Agricultural Education, each give one week of service in this course. Brief correspondence in advance addressed to the instructor in charge will enable the student to secure maximum values from the course. 6 class hours. Credit 3. *Mr. Heald.*

COURSES IN HOME ECONOMICS

Home Economics I. Clothing. — Emphasis on design and color and becomingness to the individual. Practice in making a costume slip, house dress and other dresses in cotton and linen materials. A comparison of home made and ready made garments. A child's dress may take the place of one of these problems. One two-hour laboratory period and one lecture hour daily. Credit 5. *Miss Coats.¹*

Home Economics II. Foods. — Principles of cookery with the meal as a working basis. The course gives the fundamental principles of selection and preparation of food. Emphasis is placed on the development of recipes from foundation formulæ and on the consideration of food costs in relation to the home budget. One two-hour laboratory period and one lecture hour daily. Credit 5. *Miss Van Horn.*

¹NOTE. — This will be followed in the summer session 1927 by an advanced course in clothing.

Home Economics III. House Furnishing. — This course aims to develop good judgment and right standards in the selection and arrangement of home furnishings that they may express themselves in their environment. A well-arranged, attractive home contributes largely towards a contented happy home life. There will be discussions of color combinations, good spacing, also the treatment of floors, walls, and wood-work, and practical problems in the choice and arrangement of furnishing from a sanitary, economic, and artistic standpoint. Use will be made of illustrative material. One two-hour laboratory period and one lecture hour daily. Credit 5. *Mrs. Fish.*

Home Economics IV. Millinery. — This course considers different types of hats, their appropriateness and becomingness, with practical work in remodeling of commercial frames and practice in making and trimming several hats. One two-hour laboratory period and one lecture hour daily. Credit 5. *Mrs. Preble.*

SCIENCE AND ALLIED COURSES

Food Preservation. — The course in Food Preservation is planned primarily for the teacher of Home Economics but may be applied to the needs of the home manufacturer and the home maker. Special instruction and laboratory exercises will be given each of these groups whenever necessary. The laboratories are available to individual students or to groups of students for special work if desired.

The course is planned to cover in a general way the important methods used in preserving foods; canning, drying, salting, storing and the manufacture of fruit and vegetable products. Students with problems to solve are welcome, and every facility of the Department will be placed at their disposal.

Theories and principles are taught in classroom and through assigned studies. Practical application of these are made in the laboratory. Special emphasis is placed on the scientific principles underlying the various methods employed in preserving foods. The student who thoroughly understands the why of one operation may enlarge this experience by other applications of these principles. Science and experience have added much to our knowledge during the past few years and as a result modern practices in food preservation are not the same as they were a decade ago.

A laboratory note book is required in which the student records all laboratory exercises together with cost accounts of finished products and a criticism of all products made. 5 lecture hours and 5 two-hour laboratory periods a week. Credit 5. Class hours 15. *Professor Chenoweth.*

190. Studies in Science. — Physical, chemical and vital phenomena will be considered from the standpoint of underlying processes and laws for the purpose of correlating these expressions of nature in the habits, customs, thinking and life of man and society.

Recommended for teachers of science, superintendents and principals of high schools. 5 class hours. Credit 2½. *Dr. Marshall.*

181. Public Health. — This course will treat the following subjects: the human body in health and disease; individual, family and social elements; agencies of disease — nutrition, and food including milk, food poisoning and infection, air and ventilation, water and water supplies, sewage and sewage disposal, avenues of infection, susceptibility and resistance; communicable diseases, isolation and disinfection; public control; health laws and organization.

The course is designed to meet the needs of public school superintendents, principals, and teachers. 5 class hours. Credit 2½. *Dr. Marshall.*

110, 130, 180. Microbiology. — Laboratory studies in microbiology will be given together with readings and conferences. The aim will be to provide a comprehensive understanding of protoplasm and its functionings through the medium of living forms. Owing to the simplicity of microbic life, fundamental concepts may be realized with greater ease than with more complex forms of life. Attention will be given to the distribution of microorganisms in nature, the rôle they play in the economy of nature, and their values in human welfare and existence. Credit will be given for the time devoted to these studies and the progress made. *Dr. Marshall and Miss Garvey.*

NOTE. — The courses in "Studies in Science," "Public Health," and "Microbiology" will be open to college graduates, normal school graduates and undergraduates in college above the sophomore year only. The subjects may be applied upon minor requirements in graduate study.

Insect Life. — An introductory course, arranged with particular reference to the needs of teachers in grade schools and high schools who are expected to teach about insects, either as a part of nature study or in their relations to agriculture. Five lectures per week, during which period the entire subject of Entomology is considered. Credit $2\frac{1}{2}$ or $3\frac{1}{2}$. One additional credit is given to those who elect to take the field work. *Dr. Alexander.*

Lectures. — In the lectures, particular stress is placed upon such subjects as the position of insects in the animal kingdom, their general morphology and metamorphosis, the general principles of control, and a detailed consideration of the more interesting and important local species. In all cases, the discussion is illustrated by actual specimens representing the species concerned. Special instruction is given in the subjects of collecting apparatus, collecting methods, and the making and care of a collection.

Field Work. — One field-trip each week, on Saturday afternoon. Students electing this entomological field work will be required to have a certain collecting equipment, as nets, killing bottles, boxes and insect pins. These can be obtained from the college at cost-price. The Entomological Laboratory of the College, Fernald Hall, has the reputation throughout the scientific world of being one of the finest and best-equipped laboratories in existence. Students making collections will be given opportunity to mount and preserve the material secured, and aid in the identification of such specimens will be given by the instructor. This opportunity should be especially attractive to teachers of Biology who wish to start a small reference collection of insects as an aid to their future teaching. Two of the field-trips will consider the life of still water (the College Pond) as contrasted with that of rapid-flowing streams (Orient Springs, near West Pelham). Such a comparison furnishes a surprising series of adaptations to environments. A third trip is planned to Mt. Toby, where especial stress will be placed upon those kinds of insects that are destructive to our forests and shade trees. Other field-trips will consider other phases of entomology. Although especial stress in this course is placed upon insects, a broader field is opened in this field work, and the general subject of natural history and nature study is touched upon for such students as wish instruction in this subject.

Flower Growing. — A. Garden Flowers — This part of the course aims to familiarize the student with the methods of propagation and culture, use and value of the most important plants used in flower gardens, including annuals, biennials, perennials, bedding plants, bulbs, and roses. Soils and fertilizers, as applied to flower gardening, will be considered. The Department of Floriculture has a large garden devoted to the culture of annuals and perennials which provides material for study. B. Indoor Flower Growing — This work is intended for those who wish to grow plants indoors without the use of a greenhouse. It will include a discussion of soils, fertilizers, and containers; methods of propagation and culture of plants suitable for use in the schoolroom or in the home. The filling and care of baskets, window and porch boxes will be considered. Assigned readings. Five lectures and one two-hour laboratory period a week. Credit 3. *Professor Thayer.*

Botany for the Teacher. — This course is intended primarily for secondary school teachers of botany, biology, general science, nature study and elementary agriculture, but is open to all. Principles of teaching, methods, model lessons, course content and subject matter are some of the things considered. Collecting and identifying weeds, grasses, trees, shrubs and common "wild flowers" are a feature of the course. 3 two-hour periods a week. 6 Class hours. Credit $1\frac{1}{2}$. *Dr. Davis.*

Cultivated Trees and Shrubs. — A study of the outstanding features by which these plants may be specifically recognized, their forms and habits of growth and with special emphasis given to leaf characters. So far as possible the class will be brought into direct contact with the living plants about the campus where the student will learn not only the distinguishing features but also the practical use of these plants for ornamentation. 1 lecture per week and 4 two-hour laboratory periods per week. Credit $2\frac{1}{2}$. *Professor Thompson.*

1. Design and Practical Arts. — Lectures and laboratory work developing the value of design, color, and handwork as a rural school asset. Elementary work in Japanese book-binding, free folding, cardboard construction, blackboard drawing, interior decorating, block printing, basketry, leather tooling, clay modeling, and oil painted designs on various materials. Lectures on interior decorating, design and color in dress, toy making and posters. Course 1 is a prerequisite to Course 2. Lecture daily, five two-hour laboratory periods. Credit 5. *Professor Staples.*

2. Advanced Decorative Design and Practical Arts. — For students who have had the design and practical arts course or the equivalent. Laboratory work developing design, color, and handwork as applied to the making of useful everyday articles; such as, decorated book-ends, boxes, jars, vases; painted designs on cloth, trays, baskets, hats, scarfs, etc. Five three-hour laboratory periods. Credit 5. *Professor Staples.*

3. Outdoor Sketching and Painting. (By Appointment) — This course is open to beginners as well as advanced students. Instruction will be given in outdoor sketching and painting in pencil, oil, and water color. No credits are attached to this course. Four-hour trip once a week. *Professor Staples.*

Dramatic Presentation. — Professor Patterson's course in Dramatic Presentation has been given to large classes since the beginning of the Summer School. Professor Patterson is a pupil of M. T. Brown, S. S. Curry, Otis Skinner, George Riddle, and others. He made a special study of the stage at the Comedie Francaise, Paris, where he was a pupil of Georges Berr. For some years he was on the professional stage with the Boston Museum Company, Maude Banks, Margaret Mather, and Otis Skinner. Mr. Patterson is known as a reader especially of Shakespeare's plays and Rip Van Winkle. He has given courses at West Virginia University, Boston School of Expression, and elsewhere.

The cultural value of dramatics to the individual and to the rural community is very great. Amateur plays are too conceived as mere shows or social relaxation and are produced in absolute ignorance of stage values, effective stage directions, proper play selection, character casting, and interpretation. Play production can be made both an art and a school for the rural community.

The course is practical. The members of the class are rehearsed in several plays. A few of the best plays will be presented before the school. These presentations have attracted large audiences every year. The needs of teachers who produce plays in our schools are specially considered. 2 lectures and 3 two-hour practice periods a week. Credit 2½. *Professor Patterson.*

FRESHMAN AND COLLEGE PREPARATORY COURSES

Freshman English. — English composition for Freshmen. This course is intended to teach straight thinking, sound structure, clear and correct expression. It will consist of lectures, recitations, theme writing and conferences. The amount of credit earned will depend upon the previous preparation of the student, since it is intended for college students who lack Freshman English credit. Five class hours. Credit 2½. *Professor Prince.*

Plane Geometry (Review). — Theorems and exercises to meet the present requirements of the College Entrance Examination Board. Registration is limited to students who have already considerable knowledge of plane geometry. 5 class hours. Credit 1 unit for entrance. *Mr. Barber.*

Preparatory Algebra. — A review class will be offered in algebra covering the four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear

or quadratic equations; problems depending upon quadratic equations; the binomial theorem for positive integral exponents, the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

The number in this class will be limited to twelve students so that each member of the class will receive individual instruction suited to his particular needs. Each student may advance in the work just as rapidly as his abilities permit. Those who do the work in a satisfactory manner and pass the examinations at the close of the course may present the work either for one or one and one-half entrance units of credit. Only students who already have some knowledge of mathematics should apply for this course. 5 class hours. Credit $1\frac{1}{2}$ units for entrance.

Higher Algebra (Review).—A review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, undetermined coefficients, summation of series, variation, continued fractions, determinants, permutations and combinations, logarithms, theory of equations. Intended only for students who are able to prove to the satisfaction of the instructor that their previous preparation in algebra is such as will enable them to carry this course in a satisfactory manner. 6 class hours. Credit 3.

SHORT COURSES AT MASSACHUSETTS AGRICULTURAL COLLEGE THE WINTER SCHOOL

The dates of this school are approximately from January 1 to March 10. The following subjects are offered: general agriculture, including agronomy, types and breeds, live-stock feeding, animal breeding, dairying, animal diseases, poultry husbandry, fruit growing, vegetable gardening, floriculture, horticulture, farm management, botany, entomology, sanitation and hygiene, farm structures, etc.; home-making, including foods, clothing, business of the household, and home care of the sick; professional improvement problems and agricultural education. The Winter School appeals to practical farmers and all who wish short, intensive, yet thorough courses suited to the practical man.

TWO-YEAR COURSE

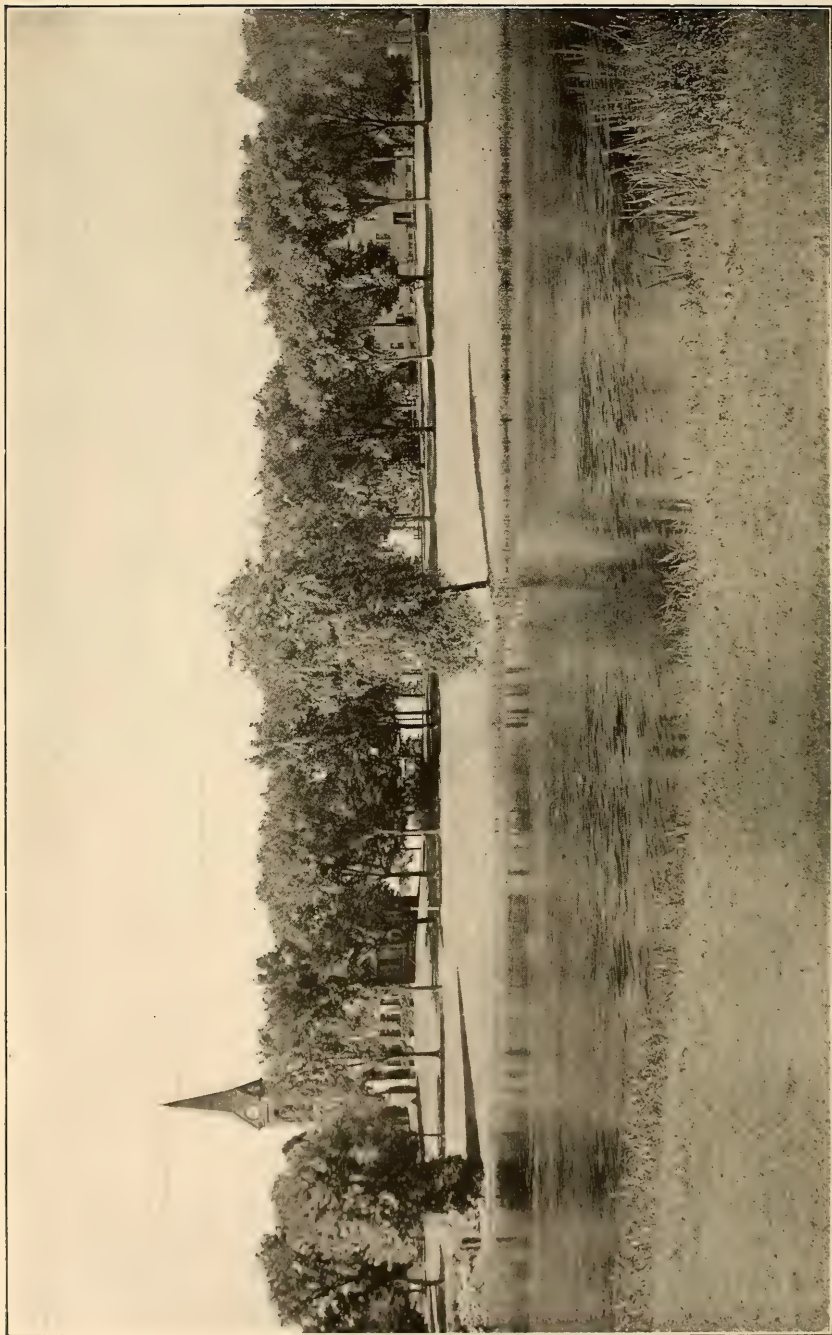
The Two-Year Course is divided into seven sections — dairying, animal husbandry, poultry, floriculture, horticulture, pomology, and vegetable gardening.

The first year consists of six months' study at the College and six months of required farm placement training, under the supervision of the College. During the placement period the student is expected to learn much of the practical side of his particular vocation. He is recommended to a position. These positions are on farms, in dairies, greenhouses, poultry plants. The nature of the position depends on the student's particular interest.

The second year consists of nine months' study at the College. On the completion of the course a certificate is granted. Tuition is \$20.00 per term to residents of the Commonwealth.

ONE-YEAR VOCATIONAL POULTRY COURSE

This course is limited to 12 students. It begins January 1 of each year. Students are required to do a large amount of practical work at the College plant. It provides excellent training for the man who wishes to go into poultry as a business. In the past it has been one of the most popular of the Short Courses.



A View of the Campus, showing Library

THE M. A. C. BULLETIN

Amherst, Massachusetts

Volume XVIII

SEPTEMBER, 1926

Number 4

Published Eight Times a Year by the Massachusetts Agricultural College
January, February, March, May, June, September, October, November

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CALENDAR, 1926-1927

Two-Year Course

1926

October 4, 5, Monday, Tuesday	Registration
October 6, Wednesday, 8 A.M.	Fall term begins
October 12, Tuesday	Holiday, Columbus Day
November 24-29, Wednesday, 12 M.; Monday 8 A.M.	Thanksgiving Recess
December 18, Saturday, 12 M.	Fall term ends

1927

January 3, Monday, 8 A.M.	Winter term begins
February 22, Tuesday	Holiday, Washington's Birthday
March 19, Saturday, 12 M.	Winter term ends
March 28, Monday, 8 A.M.	Spring term begins
April 19, Tuesday	Holiday, Patriots' Day
May 30, Monday	Holiday, Memorial Day
June 2-6, Thursday-Monday	Commencement
October 3, 4, Monday, Tuesday	Registration
October 5, Wednesday, 8 A.M.	Fall term begins
October 12, Wednesday	Holiday, Columbus Day
November 23-28, Wednesday, 12 M.; Monday 8 A.M.	Thanksgiving Recess
December 17, Saturday, 12 M.	Fall term ends

1928

January 2, Monday, 8 A.M.	Winter term begins
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STAFF

Officers of General College Administration

EDWARD M. LEWIS, A.M.
President of the College

BASIL B. WOOD, A.B.
Librarian of the College

FRED C. KENNEY

Treasurer of the College

ROBERT D. HAWLEY, B.Sc.
Secretary of the College

WILLIAM L. MACHMER, A.M.
Dean of the College

ARTHUR N. JULIAN, A.B.
Assistant Dean of the College

ROLAND H. VERBECK, B.Sc.
Director of Short Courses

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MRS. CURRY S. HICKS <i>Instructor in Physical Education</i>	The Davenport
SAMUEL C. HUBBARD <i>Foreman Department of Floriculture</i>	North Amherst
HELEN KNOWLTON, A.M. <i>Assistant Professor of Home Economics</i>	3 McClellan Street
JOHN B. LENTZ, A.B., V.M.D. <i>Assistant Professor of Veterinary Science</i>	3 Dana Street
MINER J. MARKUSON, B.Sc. <i>Assistant Professor of Agricultural Engineering</i>	1 Kendrick Place
MERRILL J. MACK, M.Sc. <i>Instructor in Dairying</i>	32 North Prospect Street
CHARLES E. MARSHALL, Ph.D. <i>Professor of Microbiology and Head of Department</i>	10 South Prospect Street
RICHARD T. MULLER, M.Sc. <i>Assistant Professor of Floriculture</i>	45 East Pleasant Street
JOHN B. NEWLON <i>Instructor in Agricultural Engineering</i>	North Amherst
MARION PULLEY, B.Sc. <i>Instructor in Poultry Husbandry</i>	70 Lincoln Avenue
GEORGE F. PUSHEE <i>Instructor in Agricultural Engineering</i>	North Amherst
VICTOR A. RICE, M.Agr. <i>Assistant Professor of Animal Husbandry</i>	35 Woodside Avenue
OLIVER C. ROBERTS, B.Sc. <i>Instructor in Pomology</i>	10 Nutting Avenue
WILLIAM F. ROBERTSON, B.Sc. <i>Instructor in Horticultural Manufactures</i>	33 East Pleasant Street
WILLIAM C. SANCTUARY, B.Sc. <i>Professor of Poultry Husbandry</i>	11 Cottage Street
FRED C. SEARS, M.Sc. <i>Professor of Pomology and Head of Department</i>	Mount Pleasant
EDNA L. SKINNER, B.Sc. <i>Professor of Home Economics, Head of Department and Adviser of Women</i>	30 Fearing Street
HAROLD W. SMART, LL.B. <i>Instructor in Business Law, Business English and Rural Sociology</i>	Lincoln Block
RICHARD W. SMITH, JR., M.Sc. <i>Assistant Professor of Dairying</i>	
GERALD J. STOUT <i>Instructor in Vegetable Gardening</i>	
GRANT B. SNYDER, B.Sc.Agr. <i>Assistant Professor of Vegetable Gardening and Head of Department</i>	Lincoln Block
CHARLES H. THAYER <i>Instructor in Agronomy</i>	South East Street
CLARK L. THAYER, B.Sc. <i>Professor of Floriculture and Head of Department</i>	North Amherst
CHARLES H. THOMPSON, M.Sc. <i>Professor of Horticulture</i>	Mount Pleasant
MARION L. TUCKER, B.Sc. <i>Instructor in Home Economics</i>	
RALPH A. VAN METER, B.Sc. <i>Professor of Pomology</i>	7 East Pleasant Street
PAUL W. VIETS <i>Supervisor of Placement Training</i>	Sunset Avenue
_____ <i>Assistant Professor of Agronomy</i>	
_____ <i>Instructor in Animal Husbandry</i>	
_____ <i>Assistant Professor of Entomology</i>	
_____ <i>Assistant Professor of Farm Management</i>	

TWO-YEAR COURSE IN PRACTICAL AGRICULTURE

The Two-Year Course in Practical Agriculture was organized in 1918 to meet the demand for a short course in agriculture that might be taken by students who either did not possess college entrance requirements, or who, for one reason or another, were unable to take the regular Four-Year Course.

Since its organization, at the request of the Massachusetts Legislature, the Two-Year Course in Practical Agriculture has registered over 1,000 students. There are now 476 graduates of the course. Practically all of these are in Massachusetts or in New England, but graduates of the course are to be found in Florida, California, and many other states of the Union.

The growth of the course and the demand for more specific vocational training made necessary a reorganization of the course in 1921. As now arranged the

student may specialize in one of seven vocations, — animal husbandry, dairying, floriculture, horticulture, pomology, poultry and vegetable gardening. This specialization does not prevent his securing a general working knowledge of other subjects.

The Two-Year Course will appeal not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming.

FARM PLACEMENT

The work of placing students on farms is in charge of the supervisor of farm placement training. Farms are selected in the State that will enable a student to gain practical experience in his particular vocation. This farm experience may, by special arrangement, be secured on the home farm. As a rule, it will be found better for a student to spend this six months away from the home farm, even though he plans to be employed on the home farm after finishing the course. This statement is based on the experience of students who have already taken the course.

If credit is to be secured for the six months' placement training the following conditions must be carefully observed: (1) the student must interview the supervisor early in his first year in order that his qualifications, the type of farming he wishes to pursue, and his general fitness be determined; (2) no arrangement for placement training may be made by the student himself until the supervisor has been consulted; (3) students are required to complete their period of training without unnecessary absences; (4) no transfers are to be made by a student if he is to receive credit until permission has been had from the supervisor; (5) a position may not be given up by the student until the supervisor has been notified; (6) a monthly report must be furnished on the form supplied, and submitted not later than the fifth of each month during his training period; (7) a student whose grade of work is regularly poor (below a 70 rating) in the classes of his major subject will not be eligible for placement training, unless recommended by the department in charge of his major work; (8) when a student fails to complete the requirements of his placement training with a satisfactory grade, he is not allowed to take the work of the second year; (9) all male students are given a thorough physical examination by the Department of Physical Education at the beginning of the college term. Any disabilities liable to affect the student's placement work are noted, and, if of a serious nature, recommendations for corrective measures are supplied. Parents should understand that most kinds of agricultural work require a well-balanced combination of brawn and brain. No student whose physical condition is questionable will be accepted for placement training without a physician's certificate, and parent's approval.

It should be clearly understood by both employer and employee that the same energy, regularity and general conduct will be expected of the student during his period of placement training as is expected in his work in classes and on the campus.

It should also be noted that this six months' farm experience is educational in its nature. Students are expected to earn and receive a reasonable wage, but the purpose of the training is the experience gained rather than the wage earned. The scale of wages may vary in different localities, but each man's ability is given very careful thought, that he may obtain a wage that is fair to him. In the event of any misunderstanding the supervisor should be immediately informed.

RULES AND REGULATIONS

Absences from Class

(1) No unexcused absences will be allowed from classes. (2) All excuses for absence shall be presented by the student in writing and, if approved by the Director, an excuse card will be granted to be signed by the instructor. Excuse cards must be returned to the office when properly signed. (3) Students presenting excuse cards covering absences are expected to make up all work missed, to the satisfaction of the instructor. (4) Absences for which no excuse card is pre-

sented shall be counted as zero in determining grades. (5) No excuses will be accepted at the Short Course Office unless presented within two days after the student returns to classes. (6) Two tardinesses unexcused shall count as one absence. (7) Absences from classes immediately before or after a holiday are not allowed except by special permission. (8) Students failing to observe these rules are placed on probation, and may be asked to withdraw from the course if further violations occur.

Absences from Examinations or Tests

(1) Any student who absents himself from an appointed examination without sufficient cause shall be given zero thereon. In such case he shall not be entitled to a make-up examination unless the Director so requests. A previously announced test may, at the discretion of the instructor, be regarded as a test or as an examination.

(2) Every absence taken before enrollment (the signing of the registration card by the teacher) in a class will be counted. The Director, however, may grant the special privilege of a visitor's card.

General Information

INSTRUCTION. — The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse and stables. It is designed to offer plain, practical, direct information, and to establish the underlying reasons as well as the method employed in the various operations. The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and women electing this course.

Entrance Conditions. — Students must be seventeen years of age or over and have completed at least an elementary school course or its equivalent. They must have had six months' practical farm experience before they will be permitted to enroll for the work of the second year. This experience may be gained after the first half year of study at the college. Application for registration must be made at least two weeks before the opening of the college year, and references furnished to whom the college may write concerning a student's ability and general character.

The Two-Year Course is not intended for students already enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement, either from the principal of the high school or from the parent or guardian, requesting enrollment.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a certificate in one year, if they are recommended by the Director of the school or the agricultural instructor, with the further approval of the Division of Vocational Education of Massachusetts.

Scholarship in agricultural subjects and farm experience must be satisfactory. When farm experience is deficient, the certificate may be withheld until the farm placement training of six months is completed for required credits.

CREDIT AND CERTIFICATE. — In order to obtain a certificate a student is expected to have satisfactorily completed all of the work called for in the general course which he has selected. A total of 125 credits is required for graduation, of which twenty-five credits, or one-fifth of the total, are assigned to practical training. A student failing to meet the requirements in his six months' summer training cannot be enrolled for his second year, since he is not entitled to a certificate of graduation.

A credit is given for one class hour, of either recitation or lecture, per week throughout a term of twelve weeks. Each two-hour laboratory period also counts for one credit. The course calls for a minimum of twenty credits each term, that is, four subjects meeting five times per week, either in class or laboratory. Upon the satisfactory completion of the course, the student is given a certificate showing the work he has done and the grades he has obtained. **A certificate will not be**

issued to any student whose record shows a deficiency in any subject or in his farm placement training. At the close of each term students receive a formal report showing the standings given in the subjects pursued by them. If a student's work is deficient in 50 per cent he may be asked to withdraw.

If a student's term mark in any subject falls below 60 per cent, or if he drops a course without the consent of the Director, he is thereby failed (F) in that subject. He shall be debarred from taking the final examination in that subject and must repeat it with the following class.

If the average of the term mark and the final examination is below 60 per cent, the student is thereby conditioned (#).

How to Enroll.—Each student is required to file with the treasurer of the college a statement, signed by the town (or city) clerk of the town (or city) from which he enrolls, stating that the parent or guardian of the student is a resident of that town. A blank for this purpose is inserted at the end of this catalogue. Upon arrival report at the office of the Director of Short Courses, located in South College, where information may be obtained in regard to board and room, schedule of classes, etc.

Student Expenses

TUITION.—Effective in September, 1926, a tuition fee of \$20 per term will be charged students, residents of Massachusetts enrolled in the four-year and two-year courses. Students who are not residents of Massachusetts are charged a tuition fee of \$60 a term. The tuition charged persons not citizens of the United States is \$60 a term. *Students entering from Massachusetts are required to file with the President a statement, signed by either town or city clerk, stating that the applicant's father is a legal resident of Massachusetts.*

All students entering the college for the first time in this course are charged a matriculation fee of \$5, which, in event of a student leaving the institution shall, if all bills due the college are paid, be remitted, or which shall upon graduation be considered as payment for the certificate.

LABORATORY FEES

The principles observed in establishing laboratory fees are the requirement that students pay for those materials actually used which cannot be supplied by the individual, and that the laboratory fees include a charge sufficient to guard against wanton waste and breakage. Fees may be established for any course without previous announcement. At present the fees charged are as follows:—

	Per Term
Agronomy S-1	\$1 50
Agronomy S-2	2 00
Animal Husbandry S-1, S-5	1 50
Animal Husbandry S-4	1 00
Dairying S-1, S-2, S-3, S-4	3 00
Floriculture S-3, S-5	3 00
Floriculture S-6	5 00
Horticulture S-1	1 00
Horticulture S-5, S-6, S-7	1 50
Microbiology S-2	5 00
Poultry S-1, S-2, S-3, S-4, S-5	2 00
Rural Engineering S-1, S-2, S-3, S-4, S-5, S-6, S-7	1 50
Vegetable Gardening S-1, S-2	1 50

INITIAL CHARGES

At the opening of the college year, before students are registered in their classes the following charges are payable at the treasurer's office:—

Matriculation fee	\$5 00	—
Board (at college dining hall) four weeks in advance	28 00	\$28 00
Assessment for support of Social Union	1 50	1 50
Laboratory fees	See schedule	See schedule
Student tax for support of athletics ¹	15 00	15 00
Student tax for support of non-athletic activities ¹	3 50	3 50

The necessary college expenses are estimated as follows:—Tuition: citizens of Massachusetts, \$20 per term, or \$40 for the first six months of class work (two

¹ While this is not essentially a college charge, the Treasurer of the college acts as collector for the student activity, and all students are expected to make the payment as indicated. The subscription price of the "Collegian" is fixed by the managers, the amount of athletic tax by vote of the student body.

terms), and \$60 for the second year of nine months (three terms); total tuition charge for the two-year course, \$100.

	First Year	Second Year	Total
Matriculation fee	\$5 00	—	\$5 00
Room in private houses	72 00	\$108 00	180 00
Board at college dining hall, Required attendance for freshmen, \$7.00 per week	154 00	224 00	378 00
Laundry, \$.50 to \$.85 a week	20 00	30 00	50 00
Laboratory fees, average	10 00	15 00	25 00
Books, stationery, and miscellaneous items	30 00	45 00	75 00
Totals	\$291 00	\$422 00	\$713 00
Mass. Student tuition	40 00	60 00	100 00
Grand total	\$331 00	\$482 00	\$813 00

The six months' placement training between the first and second years enables a student to earn from \$300 to \$450 depending upon his skill and general ability, and the type of work. Of this amount \$200 to \$300 should be saved to apply to the expenses of the second year.

Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining clubs or entering into other social activities of the college. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$400 and \$500 per year.

Student Aid

SELF HELP.—Many students are obliged to find work of some sort to earn their way through college. It is recommended that no new student enter without having at least \$250 and preferably \$350 with which to pay his way until he can establish himself in some regular work. **The college does not encourage students to enter without money in the expectation of earning their way entirely.** The student will find it better either to work and accumulate money before coming to college, or to take more than two years in completing his course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work.

Application for student labor should be made directly to the President of the college. An applicant is required to present statements from parent or guardian and from a public official or other responsible person of the town or city in which he resides, explaining the necessity of the applicant's need of assistance. Students whose deportment or class work is not satisfactory are not likely to be continued in student labor. **Opportunities for labor for Short Course men on the campus are limited to second-year men in the Two-Year Course in Practical Agriculture.** Students, therefore, may find it rather difficult to obtain all the work they desire during their first year; as a matter of fact, however, any student who is capable of doing a variety of things, and who is a competent workman, usually finds little difficulty in obtaining all the work that he can do from the outset.

Rooms

Students must secure rooms approved by the college. The assignment of rooms, and the general supervision of the housing of students, is in charge of the Director of Short Courses.

Women students are expected to occupy rooms in the college dormitory and such houses or apartments as the college may provide, and board at the college dining hall. No woman student will be allowed to room in a private house without a special written permission from the Director.

General Exercises

Chapel exercises are held two mornings each week. On Wednesday an afternoon assembly is held, to which some prominent layman or professional man is invited to speak. The object of these assemblies is to bring to the students discussions of topics of present-day interest. A special chapel service on Sunday is usually held during the winter months. Students are required to attend these general exercises, although the President is authorized to excuse from Sunday chapel any student who may object to attendance thereon because of his religious scruples, provided his request for excuse therefrom is endorsed by his parent or guardian.

Student Activities

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts Agricultural College Social Union was established about fifteen years ago. All students become members of the Union by paying a small fee, and in the fall and winter months the Union gives a series of entertainments, free to students and faculty. The Memorial Building is the center of student activities. Offices for the various student organizations, including the Two-Year Student Council, are maintained in this building. On the first floor are located a lounging room, the Memorial Room, and the offices; in the basement, bowling alleys, pool tables, store, post office, and barber shop; and on the second floor an auditorium for meetings and dances. This building was erected by the alumni, students, faculty, and friends in honor of the fifty-one "Aggie" men who gave their lives in the World War.

The Young Men's Christian Association is active both socially and religiously. A Catholic Club has also been organized.

The Two-Year Council is composed of representatives of the first and second year classes. This body serves as general director of the conduct in classes of the Two-Year men, and represents before the faculty the interests of this group of students.

Student Relations

The customary high standard of college men in honor, manliness, self-respect, and consideration for the rights of others constitutes the standards of student deportment.

Any student known to be guilty of dishonest conduct or practice must be reported by the instructor to the President for discipline.

The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the college, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet, if in the judgment of the college authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

Infirmary

The college maintains an infirmary for the care of sick or injured students. The buildings now available for this purpose are quite inadequate for the needs of the institution, and it is hoped that in the near future other buildings of this kind may be erected and the general equipment somewhat amplified. At present two small buildings, built especially for hospital purposes, are used for the infirmary.

The following statement outlines the plan followed in the management of the infirmary with respect to students:—

MANAGEMENT OF THE INFIRMARY

Supervision

1. The infirmary is under the *general supervision* of Dr. Charles E. Marshall, who is designated as Supervisor of the Infirmary. A resident nurse is in *immediate* charge of the infirmary.

Use of Infirmary

2. Students are urged to go to the infirmary at any time that they are in need of the services rendered by the resident nurse or by a town physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that the majority of the students will go to the infirmary at his suggestion. This understanding, however, should in no way deter students from going to the infirmary voluntarily at any time.

General Health

3. Students are urged to consult the physical director or the resident nurse immediately when signs of physical disorder appear. Severe attacks of cold or other forms of illness can usually be avoided if treatment is administered in the incipient stage. The purpose of the infirmary is to help maintain the general good health of the students, as well as to furnish a suitable place for professional attention in cases of severe illness or accident.

General Fee

4. The infirmary fee will be at the rate of \$2 a day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge will be made to out-patients for miscellaneous treatment of a minor character.

Additional Expenses

5. In addition to the fee charged as specified in paragraph 4, the following additional expenses will be charged to the patient:—

(a) *Nurses*.—In case a special nurse is required for the proper care of an individual, the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) *Professional Service*.—If a student requires medical attention by a physician, he will be required to select his physician and become responsible for fees charged by the physician.

(c) *Supplies*.—Special medical supplies prescribed by a physician or nurse will be charged to the patient.

(d) *Laundry*.—Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

The Library

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is believed to rank with the best of its kind.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Short Course Students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this material. The librarian and library assistants are always on hand, ready and anxious to help.

Agricultural Opportunities for Women

Agriculture is a field in which women are finding increasingly good opportunities. Poultry keeping, fruit growing, floriculture, dairying, truck farming, general farming, — all offer favorable openings for women. In all of these branches of agriculture women are farming independently. Women are also filling paid positions which include farm and estate managers and workers, garden supervisors, and workers in boys' and girls' agriculture clubs.

For the woman or girl whose home is already upon the farm the opportunity is exceptionally good. With the help of an agricultural education there are open to her many means of increasing her own or the farm income. With the knowledge of farm life which she already possesses, and with the possibility of securing occasional help from her family, she can easily carry on and develop a profitable enterprise of her own. The Two-Year Course in Agriculture will afford to the women who wish to engage in farming the practical training which they will need to fit them for their work, and will open to them new doors of opportunity. The particular problems which the women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

Women who are interested in taking agricultural courses should correspond with Miss Margaret Hamlin, who acts as adviser for agricultural courses for women. Women interested in home economics should address Miss Edna L. Skinner.

Positions

The college does not guarantee positions to students registered in any of its courses, but it has an opportunity to recommend students for a large number of positions. A record is kept of each student's work and of his farm experience, and of his success in positions for which he has been recommended after he has finished his course. The opportunities for trained men and women, especially those who have had farm experience, are exceptionally good.

A student desiring a recommendation from the college must meet the following conditions: —

- (1) He must be of good character.
- (2) His previous record must be good.
- (3) His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of farm experience cannot, as a rule, be recommended for positions of responsibility. This is especially true of the better positions for which managers or superintendents are wanted.

ANIMAL HUSBANDRY

The Animal Husbandry course is designed to give men a broad knowledge of the problems surrounding the breeding and production of farm live stock. It includes enough of the other general agricultural courses to give these men a rather broad view of practical agriculture as a vocation. It is designed to prepare men to become practical farmers as farm superintendents, herdsman, shepherds or farm owners.

The Animal Husbandry Department is especially equipped to give good Animal Husbandry instruction having an excellent laboratory in Grinnell Arena. This arena has a seating capacity of 180, and is adapted to the showing of live stock for judging purposes.

The live-stock equipment consists of about 160 head of cattle, including both dairy, beef, and dual purpose animals. Of the dairy breeds, we have representatives of superior merit of the Guernsey, Jersey, Ayrshire and Holstein. Our beef breed is the Hereford, and our dual purpose breed, the Milking Shorthorn. Some steers are fed out each year. All of these animals are used for classroom

purposes from the standpoint of practice judging, feeding, breeding, care and management.

Our sheep equipment is made up of very excellent individuals of both the Shropshire and Southdown breeds. These have been shown at the Eastern States Exposition and won many prizes. The students get practical work in the care and management, shearing and other problems of sheep husbandry.

In swine, we keep a herd each of the Berkshire and Chester White breeds. We have been using excellent sires and are developing two high-class herds.

For horses we have one pure-bred Percheron stallion, seven pure-bred Percheron mares, as well as growing colts. We also have a number of work teams of different types which are used for classroom purposes.

All of the equipment in the barns is of practical and sensible type, and everything is available for the instruction of students in Animal Husbandry.

Animal Husbandry

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Animal Husbandry S-2 (Principles of Feeding)	Six months' farm placement training
Animal Husbandry S-1 (Types and Breeds)	Microbiology S-1 (Hygiene and Sanitation)	
Dairy S-1 (General Dairy)	Motors S-2	
Poultry S-1	Business Law S-1	
English S-1 (see description of Course)	English S-2 (see description of Course)	
Tractor Practice (Required)	Milking, Harnessing and Teaming (Required)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Animal Husbandry S-3 (Feeding Practice)	Animal Husbandry S-4 (Herd Book Study and Animal Breeding)	Animal Husbandry S-5 (Livestock Management and Stock Judging)
Rural Sociology S-1 (Social and Economic Problems)	Pomology S-7 (general)	Agronomy S-2 (Crops)
Agricultural Engineering S-1 (Farm Engineering)	Farm Management S-1 (Farm Management and Accounts)	Veterinary Science S-1 (Animal Diseases)
Construction ¹	Agricultural Economics S-1	Vegetable Gardening S-6 (general)
	Animal Husbandry S-7 (Farm Meats) Elective	English S-4 (Elective)
	English S-3 (Elective)	
	Forestry S-1 (Elective)	

Animal Husbandry S-1. (Types and Breeds.) I.

This course is a study of the history of the various breeds of cattle, swine, and horses; their origin and development; their characteristics; and a discussion of the conditions to which each breed seems best adapted. The laboratory work will give the student an opportunity to do practice judging, which will familiarize him with the different types and breeds. Textbook: Plumb, "Types and Breeds of Farm Animals."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-2. (Principles of Feeding.) II.

A study of the fundamental principles of animal nutrition; of the composition and quality of feeding materials and their relative importance for the different classes of farm animals. The latter part of this course will be devoted to a study of feeding standards and the calculation of rations. Textbook: Henry and Morrison, "Feeds and Feeding."

5 class hours a week.

Credits, 5.

Animal Husbandry S-3. (Feeding Practice.) I.

This course will consist of a study of the feeding, care, and management of all classes of live stock, giving special attention to economic production. How to feed to get a large flow of milk, how to fatten, and how to grow breeding animals will receive proper attention. Prerequisite: Types and Breeds and Principles of Feeding. Textbook: Henry and Morrison, "Feeds and Feeding."

5 class hours a week.

Credits, 5.

¹ Construction — Agricultural Engineering S-7 + S-3.

Animal Husbandry S-4. (Animal Breeding and Herd-Book Study.) II.

A study of the principles involved in reproduction and improvement of farm animals; the laws of heredity and variation; the various methods of breeding, — inbreeding, line breeding, outcrossing, grading, and crossbreeding; the importance of selection; and a discussion of the needs and possibilities of improvement. Prerequisite: Types and Breeds and Principles of Feeding. Textbook: Babcock & Clausen's "Genetics in Relation to Agriculture."

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

Animal Husbandry S-5. (Live Stock Management and Stock Judging.) III.

This course consists of laboratory work in the college barns by individual students, with handling of all classes of live stock. The course will consist of five two-hour laboratory periods, three of which will be devoted to the problems of live-stock management, and two to stock judging.

5 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-6. (General Animal Husbandry.) I.

This course consists of a general study of the subject material of animal husbandry; types and market classes of live stock, breeds of farm animals, principles and practice of feeding, live-stock breeding; and management of herds, flocks and studs. Laboratory work is given in live-stock judging and management. As much detail of this broad subject is given as is consistent with time allotted. Textbook: Plumb, "A Study of Farm Animals."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-7. (Farm Meats.)

Practice is given in the slaughtering of beef cattle, hogs and sheep; judging of carcasses, and cutting and curing of meats. The possibilities of developing local New England markets are studied.

1 class hour and 1 4-hour laboratory period a week.

Credits, 3.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

POULTRY HUSBANDRY

Seven courses are offered by this department. One is a general course designed particularly to equip the student with the fundamental principles underlying successful poultry keeping as related especially to the farm flock. The other six courses are for the student who desires to specialize in poultry culture.

There is a broad field of opportunity for adequately trained men in the commercial handling and sale of poultry and poultry products, specialists in incubation, brooding and rearing, and assistants or managers of commercial poultry farms. Good profits and wages await well-equipped men and women in these and other branches of poultry work.

This department is well equipped to offer practical instruction in poultry husbandry. Our quarters and equipment in Stockbridge Hall provide ample facilities for efficient classroom and laboratory teaching.

Our practical laboratory (college poultry plant) comprises about 1,500 adult birds, divided into some 40 pens of various designs, the flocks ranging in size from 10 to 250 birds; thirty lamp incubators, as well as four mammoth machines; brooding and rearing facilities for 5,000 chicks, including many styles of stove, kerosene and electric brooders; facilities for practice in pen management, fattening, killing, picking, caponizing, judging, mixing rations; construction of poultry houses and appliances, etc.

In addition to the actual practice work performed, the student has an opportunity to keep under observation practical experiments and demonstrations continually under way for the instruction of students and practical poultry keepers.

Poultry

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agromony S-1 (Soils and Fertilizers)	Poultry S-2	Six months' farm placement training
Animal Husbandry S-1 (Types and Breeds)	Microbiology S-1 (Hygiene and Sanitation)	
Dairy S-1 (General Dairy)	Motors S-2	
Poultry S-1	Business Law S-1	
English S-1 (see description of Course)	English S-2 (see description of Course)	
Tractor Practice (Required)	Milking, Harnessing and Teaming (Required)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Poultry S-3	Poultry S-4	Poultry S-5
Poultry S-7 (Poultry Diseases)	Pomology S-7 (general)	Agromony S-2 (Crops)
Rural Sociology S-1 (Social and Economic Problems)	Farm Management S-1 (Farm Management and Accounts)	Vegetable Gardening S-6 (general)
Construction ¹	Agricultural Economics S-1	Entomology S-1 (Beekeeping)
	English S-3 (Elective)	English S-4 (Elective)

Courses in Home Economics and Agricultural Opportunities for Women may be had by arrangement

Poultry S-1. (Judging and Housing.) I.

This course embraces a study of the various economically important types and breeds of domestic fowl, judging for egg production capacity, and for exhibition quality. A visit to one Connecticut Valley poultry show may be required. This course also covers the principles and practices of constructing and equipping houses on a commercial poultry farm.

4 class hours and 2 2-hour laboratory periods a week.

Credits, 6.

Poultry S-2. (Incubation and Brooding.) II.

A study of incubation and brooding is made by means of the operation of standard incubators and brooders and through a consideration of basic principles. Students select and grade hatching eggs; complete a hatch in small incubators and run mammoth incubators for a period of time. Under supervision each student has charge of a brood of chicks.

2 class hours and the equivalent of 3 2-hour laboratory periods.

Credits, 5.

Poultry S-3. (Feeding and Marketing.) I.*

A study of the common poultry feeds, feeding principles and successful commercial farm practices. For organized practice, the feeding and management of a pen of birds for a few weeks will be required. This course also covers candling, grading and packing eggs, market classification of poultry and eggs, judging eggs, fattening, killing, dry and scald picking, drawing, shaping and packing poultry, judging of live and dressed market poultry, the requirements of various markets and relative merits of different systems of marketing. Each member of the class is required to fit entries for the Annual Market Poultry Show.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Poultry S-4. (Poultry Breeding.) II.

The course includes the study of the improvement of poultry by means of mass selection, "seed-plot" and pedigree methods of breeding. Students follow through each step of a pedigree hatch and assist in the selection of the breeders used at the college plant. Basic principles of heredity necessary for an understanding of good breeding practices are studied.

3 class hours and 2 2-hour laboratory periods per week.

Credits, 5.

Poultry S-5. (Poultry Farm Management.) III.

In this course the following points are given special attention: lines upon which a well-organized poultry farm is developed, the general arrangement of plots and buildings, record keeping, accounting and advertising, and a study of surveys. A trip covering two or three days will be made to representative successful poultry

¹ Construction — Agricultural Engineering S-7+S-3.



A Class in Egg Packing



Two-Year Course Men Testing Soil

farms. The expense per student is approximately \$15. This is required of each student taking the course for credit.

4 class hours and the equivalent of 1 2-hour laboratory period per week. Credits, 5.

Poultry S-6. (General Poultry Course.) II.

Poultry keeping as a national industry; its importance and geographical distribution; opportunities and possibilities in poultry culture in Massachusetts; principles of feeding; utility classification of fowl; incubation, both natural and artificial; the production and packing of hatching eggs; the baby chick industry; and brooding and rearing. Practical exercises will be closely correlated with the breeds and varieties, studies of various types and sizes of incubators, brooders, and brooder houses.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

NOTE. — Students who take course 6 must get permission from the Poultry Department to take advanced poultry courses.

Poultry S-7. (Poultry Sanitation and Disease Control.) I.

This course aims to acquaint the student with the normal hygienic conditions under which our domestic poultry thrive best. Sufficient anatomy and physiology will be given to enable the student to distinguish between normal and abnormal conditions. The nature of disinfectants and external and internal antiseptics will be stressed and the students made acquainted with the best usages both scientific and practical in conducting a sanitary program for disease prevention and control. A special effort will be made to link the sanitary, hygienic, and disease control problems with the so-called down-to-date practices in feeding, housing and general management.

3 laboratory periods, Microbiology Department.

2 class hours, Department of Poultry Husbandry.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

DAIRY INDUSTRY

The dairy industry course is designed to fit men for positions with market milk concerns, creameries, ice-cream factories, and specialized dairy farms. It is limited to 12 students.

The dairy work is given in Flint Laboratory, a modern building designed especially for dairy work and equipped with the newest and best types of dairying machinery.

The pasteurizing room contains a milk clarifier, cooler, and two 200-gallon vat pasteurizers. There is an ample and modern sterilizing outfit and a large and very well-equipped refrigerating plant.

The room designed for cheese making contains double-jacketed vats, cheese mixer, and draining racks, presses, etc. The buttermaking room is well equipped with power and hand churns of various types, scales, and other accessories.

In the starter-making room there is a 50-gallon double-jacketed vat, a 100-gallon vat pasteurizer, a 50-gallon starter can, and other smaller ones.

The separator room has a complete equipment of power and hand separators, milk heater, a Babcock tester, sterilizer, etc.

The testing laboratory contains all necessary apparatus, both steam and hand, for Babcock testing, and individual apparatus necessary for each student.

The ice-cream making room contains all such equipment as is found in the modern ice-cream plant.

Dairy Industry**FIRST YEAR**

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Microbiology S-1 (Sanitation and Hygiene)	Six months' farm placement training
Animal Husbandry S-1 (Types and Breeds)	Animal Husbandry S-2 (Principles of Feeding)	
Dairy S-1 (General Dairy)	Motors S-2	
Poultry S-1	Business Law S-1	
English S-1 (see description of Course)	English S-2 (see description of Course)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Dairy S-2 (5 credits) (Ice-cream Making)	Dairy S-3 (9 credits) (Market Milk)	Dairy S-4 (10 credits) (Butter Making and other products)
Microbiology S-2 (Dairy Bacteriology)	Farm Management S-1 (Farm Management and Accounts)	Veterinary Science S-1 (Animal Diseases)
Rural Sociology S-1 (Social and Economic Problems)	Agricultural Economics S-1	Agricultural Engineering S-5 (Dairy Mechanics)
	English S-3 (Elective)	English S-4 (Elective)

Dairy S-1. (General Dairy.) I.

This course takes up the question of the importance of dairying in the United States, and especially in the New England States, giving the development of dairying from the earliest to the present time. It covers the secretion, composition, and properties of milk; reasons for variation in the per cent of fat in different samples of milk; the Babcock test for fat in milk and other dairy products; other common milk tests; the advantage of testing herds, cow test associations, advanced registry work; the handling of market milk; soft cheese making, ice-cream making, and butter making as applied to general farm conditions. The laboratory work consists mainly in testing milk and dairy products for butter fat, solids, and acidity, together with some laboratory work in milk handling, butter making, cheese making, and ice-cream making.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Dairy S-2. (Ice-cream Making.) I.

In this course a careful study is made of modern methods of manufacturing the common frozen dairy products (ice cream, sherbets, and ices, also frozen puddings, punches, mousses, etc.).

The lecture work includes a discussion of the history of ice-cream making, the ingredients found in ice cream, methods of preparing and standardizing mixes, the freezing process, methods of hardening, marketing, and distribution of the finished product.

The laboratory work involves the preparation and standardization of ice-cream mixes, the freezing of ice cream and other frozen dairy products, and laboratory tests for butter fat and total solids in ice cream.

4 class hours and 3 3-hour laboratory periods a week.

Credits, 9.

Dairy S-3. (Market Milk.) II.

This course takes up the history of market milk, its food value and use. Attention is given to the necessary essentials in producing a clean product; the economics of milk production; the advantages of co-operative milk producers' organization; the various methods of marketing milk; clarification; pasteurization; cooling, etc. The laboratory work consists in visiting dairy herds and city milk plants; the operation of machinery used in connection with market milk work.

4 class hours and 4 3-hour laboratory periods a week.

Credits, 9.

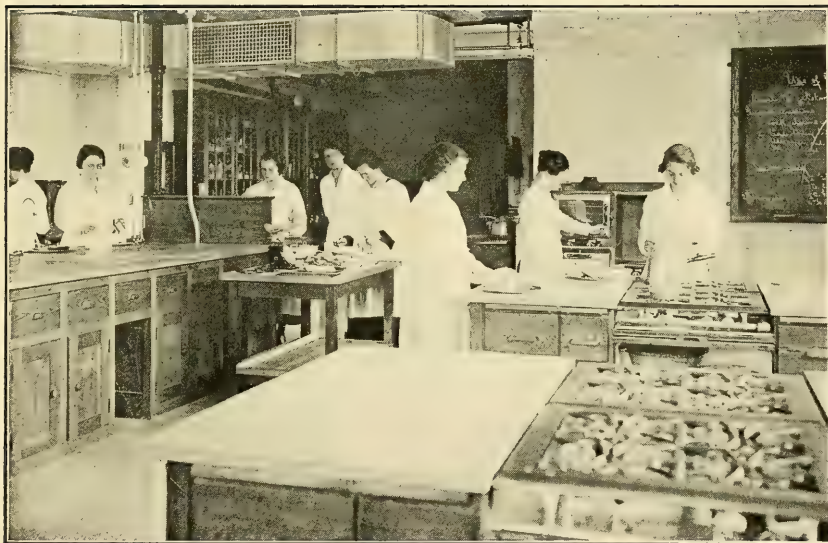
Dairy S-4. (Butter Making and Other Dairy Products.) III.

A large part of this course consists of the study of butter making; other products are, cheese and "surplus products."

Under butter making the principal factors studied are: methods of separating milk, the history, selection, care, and use of separators; the pasteurization and ripening of cream; testing cream for acidity; the making and use of starters; a study of churns and churning; modern methods of making butter; marketing butter; tests for moisture, salt, fat, and curd content of butter.



Making Butter



A Class in Cooking

Horticulture S-3. (Plant Materials.) II.

The object of this course is to learn to know the trees, shrubs, and vines used in ornamental planting, — their names, their individual characteristics as to foliage, fruit, and dormant twig features, and their habits of growth.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-4. (Plant Materials.) III.

A continuation of Horticulture S-3, giving special attention to foliage and flower characters and flowering habits of the plants. In addition, a study will be made of the evergreens and their uses.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-5. (Construction and Maintenance.) I.

Particular stress will be given to fall pruning of shrubs, together with their preparation for winter, also fall transplanting of shrubs. In addition, instruction will be given in elementary tree surgery and in walk and road maintenance.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-6. (Construction and Maintenance.) II.

In this term cost analyses and various park systems of maintenance will be discussed, together with park appliances, also winter pruning, snow removal, and winter protection of shrubs.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-7. (Construction and Maintenance.) III.

Especial attention will be given to spring pruning, lawn mowing, and lawn construction and maintenance. Tree surgery, walk and road construction and maintenance, together with weed eradication, will be studied.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-8. (Continuation of Horticulture S-2.) II.

Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

POMOLOGY

This course is arranged to give the student a sound practical knowledge of fruit growing and allied subjects. Graduates who are capable and experienced have advanced rapidly to positions of responsibility in some of the larger orchards of New England, and the demand for good men in that field is active.

Some graduates of this course have gone into business for themselves, establishing successful orchards of their own, or pruning, spraying and otherwise caring for a number of small orchards, the owners of which are not prepared to do their own work. Still others are packing house foremen or are engaged in some other marketing activity. The fruit-growing industry of New England is developing rapidly and the opportunities are excellent for good men who are well trained.

Practical work in the orchards under expert supervision is emphasized where possible. It is intended to familiarize students with the best methods that have been devised by experiment stations and leading fruit growers for the production and marketing of high quality fruits under New England conditions. The Department of Pomology has fifty acres of fruits easily accessible from the classroom, and the orchards are used freely for purposes of instruction. All the common tree fruits and small fruits are grown here on a commercial scale. Many experiments and demonstrations are in progress in the plantations, offering exceptional opportunity to the student.

A good equipment is maintained of the principal types of orchard tools and machines. Such implements as sprayers, nozzles, pruning saws, pruning shears, ladders and cultivators are available in great variety for study and trial by students.

Pomology

FIRST YEAR		
<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Pomology S-2 (Orchard and Vineyard Pruning)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Horticulture S-1 (Plant Propagation)	
Pomology S-1 (Orchard Production)	Construction ¹	
Vegetable Gardening S-1	Business Law S-1	
English S-1 (see description of Course)	English S-2 (see description of Course)	
Tractor Practice (Required)	Teaming and Harnessing (Required)	
SECOND YEAR		
<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Pomology S-3 (Harvesting and Marketing)	Pomology S-4 (Fruit Varieties)	Pomology S-5 (Spraying)
Horticultural Manufactures S-1	Rural Sociology S-1	Pomology S-6 (Orchard Management)
Agricultural Economics S-1	Poultry S-6 (general) ²	Agronomy S-2 (Crops) ²
Dairy S-1 (general)	Animal Husbandry S-6 (general) ²	Motors S-2 ²
	Forestry S-1 ²	Entomology S-1 (Beekeeping) ²
	Horticultural Manufactures S-2 ²	Horticultural Manufactures S-3 ²
	English S-3 (Elective)	English S-4 (Elective)

Pomology S-1. (Orchard Production.) I.

This course covers the planting and development of young orchards and the management of bearing plantations to produce high-grade fruit. Sites and soils for each of the tree fruits are discussed and the preferences of certain varieties for particular types of soils are studied, to guard against serious mistakes in planting. The best methods are considered for laying out orchards and for setting trees to insure a proper start. The handling of young trees to bring them into early profitable bearing is given special attention.

The culture of bearing plantations is studied in detail to give an understanding of the factors that influence yields and quality of fruit. Methods of soil management are discussed with their adaptation to common soil types and with reference to their advantages and limitations. The experimental plots afford exceptional opportunities to study cultural methods and many subjects are discussed in the orchards.

5 class hours a week.

Credits, 5.

Pomology S-2. (Orchard and Vineyard Pruning.) II.

More fruit plantations are damaged by unintelligent pruning than by mismanagement in any other single operation. If the orchardist does not know that apple trees bear on spurs, he is very likely to cut them off in pruning, and so reduce his chances for a crop. If he is ignorant of the fact that the peach bears on last year's wood, he may remove most of this wood, and incidentally most of his crop. This course aims to give the student a thorough training in the theory of pruning and the methods of bearing of the different fruits.

At the same time, every student is required to prune in the college orchards and vineyards until he becomes reasonably proficient with each kind of fruit.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-3. (Harvesting, Packing, Storing, Marketing.) I.

Handling the crop to the best advantage is one of the most important things in successful fruit growing and one which too often is badly managed because the fundamental principles are not understood. The proper time for harvesting is discussed in this course as well as the most satisfactory methods to insure a maximum storage season.

Particular attention is given to packing apples in boxes and barrels, and practice is continued under supervision until the principles are mastered. Many other

¹ Construction — Agricultural Engineering S-7 and S-4.

² Elect two subjects.

packages are packed and studied also in relation to the movement of the New England apple crop.

The principles of common and refrigerated storage are considered in detail and storage house construction under New England conditions is discussed, with a critical examination of several storages in use on or near the campus.

The competitive position of New England in the apple market is studied in relation to market demands and attention is given to export markets and to cities outside of New England. Modern methods of marketing are considered with special reference to developing local markets and to co-operation in handling New England apples.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-4. (Fruit Varieties.) I.

One of the most prolific causes of failure in the fruit business is the growing of wrong varieties; varieties requiring a dry soil are set in a wet soil; tender varieties are set in a wet soil or where only hardy ones should be used; quality, productiveness, and season of ripening are ignored; and varieties are set which might be excellent in Ohio or Virginia or Missouri, but which cannot be grown profitably in Massachusetts.

This course aims to lay the foundation for a better state of things. The student is given a thorough drill on varieties of different fruits and has an opportunity to test personally many of the leading varieties, especially of apples.

5 class hours a week.

Credits, 5.

Pomology S-5. (Spraying.) III.

In this course a careful study is made of modern methods of spraying. All the principal spray materials are studied, and the student is given practice in their preparation for use and in applying them to the orchard.

The department is well equipped with modern spraying apparatus, from bucket pumps to large power outfits, and students are required to study the construction of these pumps, and to operate them in the orchards.

Spraying is very properly regarded as one of the most important operations in connection with growing fruit, and it is the aim of this course to train students to recognize the work of our common orchard pests, to prepare the proper materials for their control, and to apply them efficiently.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-6. (Orchard Management and Small Fruits.) III.

The work in orchard management includes a detailed study of such questions as the planning and laying out of fruit plantations so that they may be handled most economically; the cost of various operations, and methods of reducing expenses; efficient handling of labor on fruit farms; the use of labor-saving devices in fruit work; the most economical units in fruit production.

While orcharding will always be the leading phase of fruit growing in Massachusetts, there are many unusual opportunities for success in growing the various small fruits. This course will deal with the problems of establishing and handling successfully plantations of strawberries, raspberries, blackberries, currants, gooseberries, and grapes, including such questions as the choice of varieties; the best types of soils; laying off and setting the plantation; the proper fertilization; methods of pruning and training. The college has large plantations of most of these fruits, so the student will have ample opportunity for all types of practical work. Everything possible will be done to make the course of the utmost practical value, as well as to give the scientific principles on which our practices are based.

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

Pomology S-7. (General Course.) II.

This course is intended to meet the needs of students in the Animal Husbandry and Poultry majors who cannot devote more than one term to the subject of Pomology. The course deals with the practical side of the growing and marketing of

fruits. Special attention is given to such questions as selection of site for the plantation, choice of varieties, grafting and budding, spraying, pruning, cultivation and cover crops, fertilizing the fruit plantation, packing and marketing.

3 lectures and 2 2-hour laboratory periods a week.

Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

FLORICULTURE

Students who complete the course in floriculture are fitted primarily for work in commercial and private estate greenhouse establishments and retail flower stores. After gaining experience, such students may be able to start in business for themselves. With the courses in general horticulture they should also be qualified for positions on private estates, in parks, or in nurseries.

The offices and classrooms of the Department of Floriculture are located in French Hall. Of the two lecture rooms, one will accommodate 40 students, the other 90 students; a laboratory, equipped with slate-covered tables, will accommodate 40 students. In the basement of the building the department has a specially prepared room for bulb storage, a fertilizer and tool room, and a large room for general storage purposes.

The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall, range of 7,200 square feet, a durable, practical commercial range, composed of palm and fern, sweet pea, carnation, rose, and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet, suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has 2 acres of land used for the summer culture of carnations, gladioli, dahlias, sweet peas and bedding plants; a perennial garden, an annual garden and a rose garden.

Floriculture

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Floriculture S-2 (Greenhouse Construction and Management)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Horticulture S-1 (Plant Propagation)	
Pomology S-7 (General Pomology)	Construction ¹	
Vegetable Gardening S-1 (Garden Farming)	Business Law S-1	
English S-1 (see description of Course)	English S-2 (see description of Course)	
Tractor Practice (Required)	Teaming and Harnessing (Required)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Floriculture S-3 (Commercial Floriculture)	Floriculture S-4 (Commercial Floriculture)	Floriculture S-5 (Conservatory Plants)
Floriculture S-6 (Floral Arrangement)	Horticulture S-3 (Plant Materials)	Horticulture S-4 (Plant Materials)
Horticulture S-5 (Construction and Maintenance)	Rural Sociology S-1 (Social and Economic Problems)	Motors S-2 or Entomology S-1
Agricultural Economics S-1	Vegetable Gardening S-4 (Vegetable Forcing)	Horticulture S-7 (Construction and Maintenance)
	English S-3 (Elective)	English S-4 (Elective)

Floriculture S-1. (Garden Flowers and Bedding Plants.) I.

This course is intended for students who will take up private estate work or who will specialize in floriculture. It will include a study of the annuals, biennials, herbaceous perennials, and bedding plants which are commonly used in com-

¹ Construction — Agricultural Engineering S-7 + S-4.

mercial floriculture and in private estate work. Methods of propagation, culture, and uses will be considered. Laboratory exercises will include work in propagation, planting, study of materials, and planning of beds and borders.

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Floriculture S-2. (Greenhouse Construction, Heating and Management.) II.

This course will take up the origin, growth, and importance of the floriculture industry; development of the greenhouse; types of houses and construction; methods of greenhouse heating; general principles of greenhouse management, including soils and their preparation, fertilizers, watering, ventilation, and fumigation; methods of propagation for plants grown under glass. Textbook: White's "Principles of Floriculture."

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Floriculture S-3. (Commercial Floriculture.) I.

Courses S-3 and S-4 will be devoted primarily to a consideration of the important commercial crops. Special attention will be given to the culture (under glass) of roses, carnations, chrysanthemums, violets, and sweet peas. Other cut-flower crops and various potted plants will also be considered. Textbooks required during the two courses will be: Holmes, "Commercial Rose Culture"; Smith, "Chrysanthemum Manual."

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Floriculture S-4. (Commercial Floriculture.) II.

A continuation of Floriculture S-3.

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Floriculture S-5. (Conservatory Plants.) II.

A study of the plants, both foliage and flowering, which are used in conservatories and in decorative work. Methods of propagation, culture, uses, and identification of plants will be included in the work.

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Floriculture S-6. (Floral Arrangement.) I.

A study of the principles underlying the use of flowers in funeral designs and sprays, table decorations, corsages, vase, bowl and basket arrangements; decorations for public functions; study of color with regard to such work. Limited to students who are majoring in floriculture. Textbooks: White, "Principles of Flower Arrangement"; Harry, "Manual of Floral Designing".

3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

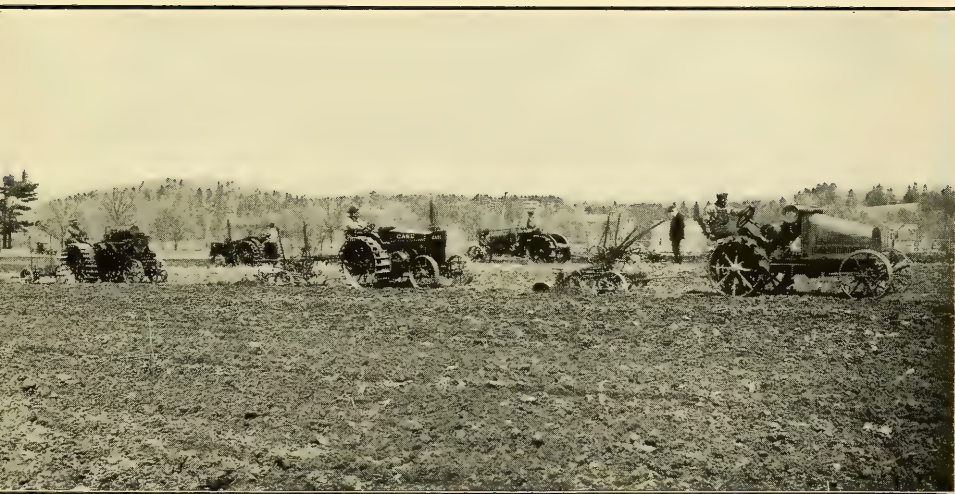
VEGETABLE GARDENING

The business of vegetable growing is one of the leading types of agriculture in Massachusetts. Middlesex County is surpassed in the value of vegetables grown for sale by only four other counties in the United States. The value of vegetables grown for home use in Massachusetts is more per farm than in any other State in this country. The vegetable greenhouse district around Boston is one of the largest in the United States, and the only district growing head lettuce under glass. The Massachusetts markets for vegetables are considered by many to be among the best, for we are further removed from the large vegetable trucking sections than other large centers of population, while our markets demand high-quality vegetables.

The two-year course in Vegetable Gardening is designed to prepare men to go



Fertilizer Mixing



Tractors at Work

into business for themselves as market gardeners, truck farmers, and greenhouse vegetable growers. For those whose principal interest may lie in other fields of agriculture the course has much to offer along the lines of special crops, often spoken of as cash crops. For those who wish to work for someone else this course offers training such that its graduates are being placed in responsible positions with commercial vegetable growers, seed growers, and on private estates.

Vegetable Gardening

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Horticulture S-1 (Plant Propagation)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Construction ¹	
Pomology S-1 (Orchard Production)	Business Law S-1	
Vegetable Gardening S-1	Pomology S-2 (Orchard and Vineyard Pruning)	
English S-1 (see description of Course)	English S-2 (see description of Course)	
Tractor Practice (Required)	Teaming and Harnessing (Required)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Vegetable Gardening S-3	Vegetable Gardening S-4	Vegetable Gardening S-7
Pomology S-3 (Harvesting and Marketing)	Rural Sociology S-1	Pomology S-5 or
Agricultural Economics S-1	Pomology S-4 (Fruit Varieties) ²	Pomology S-6
Horticultural Manufactures S-1	Poultry S-6 (general) ²	Motors S-2
	Horticultural Manufactures S-2 ²	Horticultural Manufactures S-3 or
	English S-3 (Elective)	Entomology S-1 (Beekeeping)
		English S-4 (Elective)

The business of vegetable gardening may be undertaken with a limited outlay of capital, for the returns on the capital invested are quickly secured. Some vegetable crops mature in a very few weeks, thus enabling one to turn over his capital from one to three times per season. The nature of this business is such that one locates as near the market as possible, and because of the growth of our cities, vegetable growers, as a group, have profited much by an increase in land values.

The Vegetable Gardening Department has 10 acres of land, 3,500 square feet of greenhouse space, and 500 linear feet of hotbeds and cold frames. These are used to give the student thorough practical training in the fundamentals of vegetable growing, plant production, and vegetable forcing. The office, classroom and laboratory are located in French Hall.

Vegetable Gardening S-1. (Garden Farming.) I.

Students will find this course one which will fit them to carry on estate work, to make the best use of the farm home garden, or to go on with commercial vegetable growing. This is a general, all-round course, studying vegetables from the standpoint of types. The student will work with the leading types of the common vegetables, learning their requirements. Special attention will be given to the harvesting and storage of crops for winter and fall preparation of the land. 3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Vegetable Gardening S-2. (Commercial Vegetable Gardening.) II.

"As a prospective commercial vegetable grower and a producer of food, what must I know of the value of vegetables as a food, their history, present extent of this business and the outlook for the future?" These questions are studied as well as many of the fundamentals of vegetable production. Practical work will consist of vegetable seed study, seed germination, and production of vegetable plants under glass. Special care will be given to acquaint the student with the importance of detail, so that he will be able to make the best of the six months' training with some of the leading vegetable growers of this State.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

¹ Construction — Agricultural Engineering S-7+S-4.

² Elect two subjects.

Vegetable Gardening S-3. (Types and Varieties.) I.

Success or failure in vegetable production depends upon the proper selection of types and varieties. Market demands differ in different sections, and there is a difference in the types produced from various seed sources. This department maintains a variety garden, growing some 250 or more varieties of vegetables, so as to train the student in the proper selection of types and varieties. Study is given to the source and desirability of good seed. The importance of high quality and good appearance of vegetables is kept before the student so that he will be fitted to judge and exhibit vegetables.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-4. (Vegetable Forcing.) II.

The demand is increasing for fresh vegetables out of season, and Massachusetts markets are among the best for such products. This course meets a real demand by giving the student training in the production of vegetables out of season. There is a demand for the men with this training. The student will try out the latest and best methods of caring for greenhouse crops.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-6. (Vegetable Crops for the General Farm.) III.

Many of the vegetable crops are of such a nature that they can be successfully grown as a side line to other types of farming. Special emphasis will be given to those crops which the men interested in animal husbandry can use for a money crop or for stock-feeding purposes. The farm home garden is important for any farm, and here in this State the yield from such gardens is greater than in other States. As the area on the general farm devoted to vegetables is one of the most productive in money value, this course will show the student how to make the best use of this farm home garden.

3 class hours, 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-7. (Problems in Commercial Vegetable Gardening.) III.

In order to understand the best methods of growing vegetables on a commercial scale the student must be acquainted with the principles underlying these practices.

Weekly assignments dealing with specific problems as encountered in the actual business of growing vegetables commercially are worked out by the students. Such problems as weather and market reports, the purchase of seeds, fertilizers and equipment, spring preparation of the soil, the study of various forms of machinery used by the market gardener, the identification of obnoxious weeds, with methods of control, injurious insects and diseases, are included in the course. Organized trips to market garden sections of the Connecticut Valley and the vicinity of Boston are required in this course.

1 2-hour class period per week, 4 1-hour outside laboratory periods per week.

Credits, 5.

NOTE.— Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

GENERAL COURSES FOR WOMEN

There was offered in the fall of 1922, for the first time, a general course for those young women who do not want to specialize in any one branch of agriculture, but who do want preparation for rural life. This course includes such agricultural and home economic courses as the country girl would be most likely to use, both for profit and for pleasure. This course should appeal to many young women whose home is on a farm or in a small town; or those who hope some time to live in the country.

General Course for Women

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1	Horticulture S-1	Six months' farm placement training
Floriculture S-1	Home Economics S-2	
Home Economics S-1	Home Economics S-3	
Agricultural Opportunities for Women S-1	Microbiology S-1 (Sanitation and Hygiene)	
Physical Education S-1 (Required)	Physical Education S-2 (Required)	
English S-1 (see description of Course)	English S-2 (see description of Course)	

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agricultural Economics S-1	Poultry S-6 (general)	Horticultural Manufactures S-3
Animal Husbandry S-6 (general)	Pomology S-7 (general)	Vegetable Gardening S-6 (general)
Horticultural Manufactures S-1	Home Economics S-4	Home Economics S-5 (House Furnishing)
Physiology S-1	<u>Dairy S-1 (general)</u>	Entomology S-1, or ---
Physical Education S-3 (Elective)	Electives:	Floriculture S-6, or ---
	Horticultural Manufactures S-2	Poultry S-5
	Rural Sociology S-1	English S-4 (Elective)
	English S-3	
	Physical Education S-4	

RELATED SUBJECTS IN OTHER DEPARTMENTS

Agricultural Economics S-1. (Marketing.) I, II.

The purpose of this course is to present the business side or economics of agriculture. It is based upon the principle that products are made to sell, that the real object is to produce large money returns. The goal is the largest possible net profits with a given amount of land, labor, money, and equipment. The course deals with the possible types of profitable commercial agriculture in New England; the present location of the most profitable farming sections, the choice of a farm; the necessary investment, and the proportion to invest, in land, in improvements, in stock and equipment, and in reserves for labor and supplies on different kinds of farms.

Another section of the course treats of the principles of farm credit. Who should borrow, sources of credit, mortgage credit, farm loan associations, land banks, personal credit, national bank loans, credit unions, terms of credit, and how to use credit profitably are some of the topics studied.

Another division of the subject is marketing farm products. This will be treated in a very practical manner. The following are some of the topics: marketing as a part of production; outlets of the sale of farm products; principles of marketing; description of wholesale methods of distribution; middlemen, functions, and abuses; methods of sale, prices of farm products; price quotations; government aid in marketing; direct marketing; co-operative buying and selling; methods of successful co-operation; farmers' exchanges in Massachusetts; how to organize successfully.

Each student will be required to select some principal product in which he is interested, and make a careful study of its production, handling, and marketing on a profitable commercial scale. This course is given by the Department of Agricultural Economics. Lectures, textbook, original study, and report.

5 class hours a week.

Credits, 5.

Department of Agricultural Economics.

Agricultural Engineering S-1. (Farm Engineering.) I.

This course is intended to familiarize the student with the various types of farm implements, to teach him their operation and care, and give practice in the adjustment and repair of the mechanical equipment on the farm.

The various types of field implements are studied, and emphasis is laid on the selection of implements suited to New England conditions. The adjustment of machines is discussed and the student is given practice in setting machines for different field conditions.

Part of the course is given over to the repair of farm equipment. In this work part of the time is given over to blacksmithing and the balance to such exercise

as soldering, babbiting and fitting bearings, lining up shafting, pipe fitting, threading bolts and nuts, and practice in tying knots and splicing rope. Farm implements are brought in and overhauled to give practical work in this line. In the limited time available it is not expected to make a blacksmith or mechanic out of the student, but it is hoped that the student will learn to know the tools used and get sufficient practice in their use so that he can make repairs on his own equipment.

Part of the course is given over to the study of water supply systems, including pumps, rams, and complete power systems. Farm-lighting plants are also studied, attention being given to selection, as well as care and operation. The principles underlying the practice of farm drainage are discussed, and practice is given in the use of simple leveling instruments for the purpose of accurately grading tile drainage ditches.

2 lectures and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-2. (Farm Motors.) I, III.

This course deals with the gasoline engine as used for stationary work, automobiles, and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-3. (Carpentry.) I, II.

This course gives practice in the care and use of carpenters' tools through bench work, repair of farm equipment, and building construction. Small buildings are erected by the students to give practice in all the phases of house construction. Practice is given in the building of forms and in the mixing and placing of concrete. (Must be taken with Agricultural Engineering S-7.)

2 2-hour laboratory periods a week.

Credits, 2.

Department of Agricultural Engineering.

Agricultural Engineering S-4. (Repair of Farm Equipment.) II.

The object of this course is to give practice in the handling of tools, which will help in the repair of farm machines and miscellaneous farm equipment. Practice is given in forging, including drawing and shaping iron and steel, welding and tempering edged tools, and general blacksmith's repairing. Exercises also include pipe fitting, soldering, splicing rope, belt lacing, and babbiting and adjusting bearings. Practice is given in the use of machinists' tools, such as cold chisel, file, taps and dies, drill press, and lathe. (Must be taken with Agricultural Engineering S-7.)

2 2-hour laboratory periods a week.

Credits, 2.

Department of Agricultural Engineering.

Agricultural Engineering S-5. (Dairy Mechanics.) III.

This course is planned for men who are fitting themselves to take charge of dairy plants or allied lines of work. A study of steam boilers, steam engines, steam turbines, pumps, steam traps, line shafts, belting, electric motors, milking machines, and refrigeration plants.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-7. (Farm Structures.) I, II.

A study of the building materials commonly used in farm construction; details of construction and simple structural mechanics; the principle of design of such farm buildings as the dairy stable, hog house, horse barn, general purpose farm, fruit and vegetable storage buildings, etc.

In the drafting room practice will be given in the use of drawing instruments, and instruction given in the fundamentals of mechanical drawing. Each student will have opportunity to design in complete detail one of the major farm buildings

in which he is particularly interested. (Must be taken with Agricultural Engineering S-3 or S-4.)

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Department of Agricultural Engineering.

Agricultural Opportunities for Women S-1. I.

Agriculture is a field in which women are finding increasingly good opportunities.

The particular problems which the women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

2 class hours a week.

Credits, 2.

Miss HAMLIN.

Agronomy S-1. (Soils and Fertilizers.) I.

All agricultural interests are vitally concerned with the soil and its adaptation and management for plant production. This course treats of the selection of suitable soils for the different purposes of agriculture, horticulture and floriculture, and with the management of soils as regards moisture control, tillage, organic matter, soil bacteria, manure, lime and fertilizer. The laboratory work gives training in the use and interpretation of the maps of the soil survey, in tests of soil texture, organic matter and acidity and in the identification of fertilizer materials. The composition and use of fertilizers will be studied and practice given in the calculation of fertilizer formulas. Practical field work will be given in judging the adaptation and value of soils, and field demonstration of the use of the tillage tools of the college farm.

As a field project the student will be required to make a study of some farm, nursery or florist's plant. This project includes a survey of the soil conditions and methods of soil and crop management, and recommendations based on a thorough analysis of the system from the soil up.

3 class hours, and 2 3-hour laboratory periods per week.

Credits, 5.

Agronomy Department.

Agronomy S-2. (Field Crops.) III.

This course is planned to acquaint the student with the best and most successful practices of production and harvesting of field crops. Problems usually arising in connection with these practices will be studied. Special attention will be given to the hay crop, corn, potatoes, roots, and pastures. Field work with growing crops and laboratory work in the identification of seeds of grasses, clovers, weeds and small grains, in tests of purity and germination of seeds and judging of different types of corn and potatoes will be given. Before completing the course the student will be expected to know how to select varieties, test seed, prepare the soil, select and apply fertilizer, plant, cultivate, harvest and store the field crops important in Massachusetts.

2 class hours, and 3 2-hour laboratory periods.

Credits, 5.

Agronomy Department.

Business Law S-1. II.

Required for freshmen. To consist of a particular study of the contract, drawing, reading and interpreting the same; the sale; and problem work. Other branches of the law such as deeds, mortgages, corporations, partnerships, commercial paper, torts and personal rights explained and presented by lectures during the course. Particular stress is placed on the reasoning process.

5 hours a week.

Credits, 5.

English Composition S-1 and S-2. I and II.

Required for freshmen with less than two full years of high school preparation, or its equivalent; and elective for others. To consist of directed readings (one book or its equivalent per week); essay writing (one short essay, book report, personal or business letter, or writing of a similar nature per week); and an oral

presentation (a five-minute address or talk on an assigned topic to be prepared for each week; and as many heard as time permits).

3 hours a week through two terms, fall and winter.

Credits, 5.

English Composition S-3 and S-4. II and III.

Required of seniors interested in dramatic presentation and elective for the rest. This course is in continuation of the freshman course; but lays particular stress on the drama and dramatic presentation. (All dramatic presentation endeavored by the Two-Year Course, or other short courses to be under the direction of the instructor in English Composition.)

3 hours a week through two terms, winter and spring.

Credits, 5.

Entomology S-1. (Beekeeping.) III.

This course comprises a general consideration of the biology of the honey bee and the elements of practical beekeeping. Some topics covered are: life history, general behavior and instincts, structure, products, relations of bees to plants, the honey flora. The course aims particularly to afford first-hand practical experience with bees, to the end of enabling their proper maintenance for any purpose, — horticultural, educational, or agricultural. Bee diseases, a thorough understanding of which is fundamental, are emphasized. So far as possible, the work is made individual in constructing materials and apparatus and in the manipulation of bees.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Entomology Department.

Farm Management S-1. (Farm Management and Accounts.) II.

A study of farming as a business; the correlation and adaptation of different farm enterprises, as dairy, orchard, poultry, to the specific farm; land, labor, and capital requirements; farm and building, plans and arrangements; the choice and purchase of a farm. Several laboratory periods will be devoted to practice in farm accounting. Farm experience is a prerequisite to this course.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Department of Farm Management.

Forestry S-1. (Woodlot Management.) II.

A course in tending, harvesting, marketing, and renewing the forest crop, with particular reference to the problems of the farm woodlot. The instruction is mainly practical, and is conducted in the field, with a minimum of bookwork; but there is a constant emphasis upon the development of keen and imaginative observation, and the acquisition of the conservationist point of view. Opportunities for field work are varied and extensive. There are woodlots of several types on or near the campus, and students have the fullest use of the Mt. Toby Demonstration Forest, a 750-acre tract 7 miles distant, belonging to the college and managed by the Forestry Department.

2 class hours and 1 4-hour and 1 2-hour field periods a week.

Credits, 5.

Forestry Department.

Home Economics S-1. (Clothing.) I.

An important problem in the home today is the selection of fabrics; therefore their character, cost, and durability are studied with reference to planning a wardrobe for a limited income.

Consideration will also be given to the principles of design, appropriateness, and simplicity in dress to develop good taste.

There will be practical work in sewing and making garments.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Home Economics Department.

Home Economics S-2. (Foods.) II.

Every woman concerned with the welfare of the family is interested in the problem of nutrition. To select food wisely, and to prepare it, that the greatest amount of nutrition may be saved, is of the utmost importance.

Special study will be made of the needs of the body and the selection of foods to supply those needs; also care in the handling and keeping of foods, and planning meals for efficiency and economy.

Balanced menus are not vague and mysterious, but result from the application of a few fundamental principles. Many people are underfed, not from a lack of food, but from an unwise choice.

This course will include laboratory work of practical value.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Home Economics Department.

Home Economics S-3. (Home Nursing.) II.

It should be far easier to keep well than to become sick, provided one understands the fundamental principles of hygiene, thus insuring the care of the family health.

However, every home-maker needs some knowledge of home care of the sick, including the study of simple diseases and their prevention, the care of young children and invalids, and first aid to the injured.

5 class hours a week.

Credits, 5.

Home Economics Department.

Home Economics S-4. (Home Management.) II.

There are many efficient methods successfully used in the business world which can be applied in the business of home-making.

Since the home-maker is largely responsible for all expenditures connected with the house, an important consideration in this course is the study of the family budget, the apportionment of the income, and the keeping of accounts.

Equally important is the standardization of household tasks, the study of systematic methods of work, selection and care of equipment, and the use of time and labor saving devices.

5 class hours a week.

Credits, 5.

Home Economic Department.

Home Economics S-5. (House Furnishing.) III.

This course aims to develop good judgment and right standards in the selection and arrangement of home furnishings that they may express themselves in their environment. A well-arranged, attractive home contributes largely towards a contented happy home life. There will be discussions of color combinations, good spacing, also the treatment of floors, walls, and wood-work, and practical problems in the choice and arrangement of furnishing from a sanitary, economic, and artistic standpoint.

5 class hours a week.

Credits, 5.

Home Economics Department.

Horticultural Manufactures S-1. I.

The utilization of culls and low grades of fruits and vegetables is becoming a more important problem each year. Producers should be able to market their whole crop at a profit. The general problems studied in this course will be: the manufacture of apple products from cull apples; the canning of all fruits and vegetables available at this season, together with the manufacture of their various products, such as jams, jellies, conserves, pickles, etc.

Students will be required to keep accurate costs of materials in all canning and manufacturing operations together with a record of methods used.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Horticultural Manufactures.

Horticultural Manufactures S-2. II.

This is a continuation of Course S-1. The preservation of small fruits together with the manufacture of their products; the evaporation of fruits and vegetables, and the manufacture of fruit syrups are the principal subjects studied. Prerequisite: Horticultural Manufactures S-1.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Horticultural Manufactures.

Horticultural Manufactures S-3. III.

This is a continuation of Horticultural Manufactures S-1 and S-2. The manufacture of maple products, fermented pickles, and the canning of spring vegetables will be the principal subjects studied. Students will be given opportunity to make special studies along the lines of their greatest interest. Prerequisites: Horticultural Manufactures S-1 and S-2.

2 class hours and 3 2-hour laboratory sessions per week.

Credits, 5.

Department of Horticultural Manufactures.

Microbiology S-1. (Hygiene and Sanitation.) II.

Deviation from health, from the normal being, is disease. The human body is susceptible to deviation from health. Certain elements are responsible for the entrance of disease into the body. The body becomes weakened through exposure, lack of exercise, unsuitable food, abuses. Under such circumstances it lays itself open to attack. There is the attack from within, which consists of some organic derangement, and the attack from without, which makes it possible for foreign enemies, agents, or micro-organisms to enter.

Closely associated with the production of disease are intermediaries and casual factors, as ventilation, water-supplies, sewage disposal, and food. They serve as vehicles for disease agents. The germs of disease find their way through them, and are carried by them. Besides, human contact seems to be the most important disseminator, and insects and animals may harbor or convey, and in some instances instigate, disease.

Then there are those conditions which react on the body in a physical manner and influence its mechanism and its operating facilities, as mental disturbances, character of food, conditions of living.

It is the purpose of this course to discuss the nature of diseases, what causes them, the significance of sanitation and hygiene in preventing them, and the methods of control; in other words, to study, in the light of present knowledge, how to preserve health and prevent deviation from health.

5 class hours a week.

Credits, 5.

Microbiology Department.

Microbiology S-2. (Dairy Bacteriology.) I.

Bacteria and other micro-organisms are the responsible agents for the changes which occur in milk and for the contagion which sometimes causes diseases. They are found in milk at times when leaving the udder, they get in with the dust and dirt while milking, and they adhere to the dairy utensils, which carry them over from one milking to the next. From the cow to the consumer there is the constant presence of these micro-organisms to contend with, on the one hand, and to foster, on the other. All steps taken are significant in their control. The milking process, the handling of the cow, the condition of the milker, the cleansing of utensils, the management of the stable, the feeding, straining, aeration, cooling, clarifying, pasteurizing;—all are steps in the control of micro-organisms.

Many kinds of changes take place in milk, due to different kinds of micro-organisms. Many of these changes are sought, as the ripening of cream for butter, of milk for cheese, of milk for milk drinks; and many of these changes, also, are fought against, as ropy milk, sour milk, bitter milk, tainted milk, etc.

Micro-organisms of typhoid fever, scarlet fever, diphtheria, and others not infrequently find their way through the milk to the consumer, and produce epidemic forms of these diseases.

It is evident, therefore, that to handle milk and milk products safely it is desirable to know something of the agents which are the source of so much attention in the dairy. This indicates the nature of the substance of this course. This course is required of all students who elect dairying as one of their special lines of work.

5 2-hour laboratory periods a week.

Credits, 5.
Microbiology Department.

PHYSICAL EDUCATION

(For Women)

All women students are required to take physical education throughout the first year and may elect it with credit during the first and second terms of the last year.

Physical Education S-1. I.

This course will include such outdoor sports as soccer, basketball, tennis and hiking.

2 class hours a week.

Credits, 2.

Physical Education S-2. II.

This course will include posture exercises, folk dances, and games.

2 class hours a week.

Credits, 2.

Physiology S-1.

This course deals with the various functions of the human body, especially in connection with our daily lives. Such subjects as the anatomy and physiology of the digestive, nervous, respiratory, circulatory systems, et cetera, will be considered in as great detail as possible. An attempt will be made to point out the practical value of an understanding of the structure of the body in relation to the maintenance of health.

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.
Microbiology Department.

Rural Sociology S-1. I and II.

Required for seniors. The first part of the course to deal with a study of the individual and his relationships and conflicts in society. Particular note to be taken of rural society and its problems. The remainder of the term to be taken up with specific problem study, individual topics to be assigned and papers prepared and read in class on the same.

5 class hours a week.

Credits, 5.

Veterinary Science S-1. (Animal Diseases.) III.

This course acquaints the student with the more common diseases to which domesticated animals are susceptible. Particular attention is given to conditions favoring diseases, to communicable diseases, and to prophylactic measures, in order that the student may be able to reduce the prevalence of disease among animals in his charge.

5 class hours a week.

Credits, 5.
Department of Veterinary Science.

SHORT COURSES AT THE MASSACHUSETTS AGRICULTURAL COLLEGE

Short Courses are based on the idea that the motive which inspires study is the most-significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore, there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In

this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge given. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth, and the demand for these courses in recent years has been even greater than in the past.

A ONE-YEAR VOCATIONAL COURSE IN POULTRY HUSBANDRY

J. C. GRAHAM, LUTHER BANTA, W. C. SANCTUARY, MISS MARION PULLEY

The One-Year Vocational Poultry Course is designed to meet the needs of those who wish to specialize in this branch of agriculture, but who can spend only one year at the college. The course is vocational in its nature, the plan of which is to "learn to do by doing".

In addition to Poultry courses 1 and 2, students elect enough collateral work from Course 11 to make a total of 18 to 20 credit hours. From the close of the Winter School, about March 10, until college closes, the latter part of June, they devote all of their time to poultry work. During the summer vacation, students have an opportunity to secure additional practical experience on general or specialized farms. With the opening of college in the fall, students again devote all of their time to poultry work, finishing the course at the end of the fall term, the latter part of December. As the busy season with poultrymen begins soon after the first of the year, the students, by finishing the course before the holiday season, are ready to accept attractive positions or enter business for themselves.

Courses of Study

Course 1. II. Introductory Course. This course covers a general survey of the poultry industry of the United States as a whole. Particular emphasis is laid upon the operation and possibilities of profitable poultry keeping in New England and the part poultry should play in the development of New England agriculture. 2 class hours per week. 2 credits.

Course 2. II. Poultry Breeding. This is a very practical course covering the improvement of poultry by means of mass selection and pedigree breeding. The laboratory work enables the student to follow through, step by step, eggs from a pedigreed flock from the time they are laid until the hatched chick is banded. 3 class hours, 2 2-hour laboratory periods per week. 5 credits.

Course 3. II. Poultry Diseases. This course endeavors to acquaint the student with the sanitary conditions under which poultry thrive best; the difference between normal and abnormal (disease) physical conditions; the nature and use of disinfectants and antiseptics; and the most modern sanitary practices in keeping flocks free from disease. 3 class hours. 3 credits.

Course 4. III. Poultry Feeding. This course includes a study of common poultry feeds and the most important principles underlying successful feeding practices on commercial farms. The laboratory work includes the care of a pen of birds for a few weeks in order to familiarize the student with the best practices and allow him to get first-hand knowledge on the results of his work. 3 class hours, 2 laboratory periods. 5 credits.

Course 5. III. Incubation and Brooding. Practical lecture and laboratory course in incubation, brooding and growing chicks. Students obtain a knowledge of the fundamental principles underlying these two processes and receive

practice in operating both small and mammoth incubators and various types of brooders. 2 class hours and 3 2-hour laboratory periods. 5 credits.

Course 6. III. A conference, observation and general reading course equivalent to 1 or 2 recitations per week. In this course the student becomes acquainted with the best literature on poultry through books, station bulletins, scientific articles, poultry magazines, etc. 1 or 2 class hours; 1 or 2 credits.

Course 7. III. Plant Practice. This course covers a large number of very practical operations not listed under other courses such as: — special work in incubation, pedigreeing, preparation of baby chicks for shipment, caponizing, repairing and making equipment for range and houses and the solution of problems connected with poultry management in general. Work equivalent to 5 credit hours.

Course 8. I. Poultry Judging. This course covers a study of the economic breeds and varieties of poultry and lays special emphasis upon what is known as culling; that is, a careful interpretation of physical characteristics of poultry in their relation to egg production. Equivalent to 1 class hour and 2 laboratory periods. 3 credits.

Course 9. I. Marketing. This course acquaints the student with market qualifications of poultry and eggs and the requirements of our eastern market centers. The laboratory work covers the grading, packing, and judging of eggs and dressed poultry. A special requirement of this course is the fattening of one or more pens of poultry and the keeping of special data on same. Assisting with the Annual Market Poultry Show is an important part of the course. Equivalent to 1 lecture and 2 laboratory periods. 3 credits.

Course 10. I. This course consists of a discussion of a series of logically arranged problems covering the field of Poultry Farm Organization and Management. Much of the work centers about projects of the individual student. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit. 4 class hours and the equivalent of 1 2-hour laboratory period. 5 credits.

Course 11. II. Supplementary Courses. Each student shall elect from the Winter Short Course or Two-Year Courses under the direction of the Department Head from 10 to 15 credit hours. Courses from the following departments are suggested: Farm Management, Market Gardening, Agricultural Engineering, and Pomology.

Entrance Requirements

Applicants must be at least eighteen years of age and have a good elementary education.

Fees

Effective in September, 1926, a tuition fee of \$20 per term will be charged students, residents of Massachusetts, enrolled in the four-year, two-year, and one-year courses. A laboratory fee of \$5 is required for the fall term and the same for the spring term.

THE SUMMER SCHOOL

The college has maintained a Summer School for the past seventeen years. The Summer Course is intended for high school teachers, teachers of agriculture, instructors in home economics, and for students who wish courses in agriculture and horticulture. The course lasts six weeks, beginning about the first of July and continuing through the month to about the second week in August. All courses offered, if successfully completed, carry collegiate credit.

The following schedule of courses, offered in 1926, indicates the nature of the work: —

Principles and Methods of Teaching	Clothing
History of the Philosophy and Practice in Education	Foods
Educational Psychology	House Furnishing
Methods of Teaching Junior and Senior High School Mathematics	Millinery
Content and Methods in Community Civics (Junior High School)	Food Preservation
Content and Methods in Social Studies in Senior High School	Studies in Science
Special Methods in Teaching Vocational Agriculture	Public Health
Tests and Measurements	Microbiology
Supervised Teaching	Insect Life
Supervision and Administration of Secondary Education	Flower Growing
Experimental Psychology	Botany for the Teacher
The Employed Teacher of Agriculture	Cultivated Trees and Shrubs
Vocational Education	Design and Practical Arts
	Outdoor Sketching and Painting
	Dramatic Presentation
	Freshman English
	Plane Geometry
	Preparatory Algebra
	Higher Algebra

THE WINTER SCHOOL

The Winter School has been established for a number of years at the college, and has proved to be very popular with farmers, their wives, sons, and daughters, teachers, college graduates, and others. This school begins about the first of January. Instruction was offered last year in —

Soil Fertility	Tree Fruits
Field Crops	Pruning Tree Fruits
Types and Breeds of Live Stock	Spraying
Live Stock Feeding	Small Fruits
Animal Breeding	Harvesting and Marketing
Farm Management	Horticultural Manufactures
Farm Accounts	Marketing Farm Products
Farm Motors	Botany
Dairy Bacteriology	Entomology
Animal Diseases	Rural Sanitary Science and Hygiene
Poultry Diseases	Agricultural Opportunities for Women
Poultry Husbandry	Foods
Vegetable Gardening	Clothing
Principles and Methods of Teaching	Millinery
Special Methods in Vocational Agricultural Teaching	Business of the Household
Agricultural Teaching Improvement	Home Care of the Sick
Problems in Massachusetts	Practical and Scientific Course for Florists

A series of special two-week courses in ice-cream making, butter making, milk testing, and market milk are offered. During the two weeks the student devotes all of his time to the work of the special course in which he has enrolled. The instruction lasts throughout the day from 8 to 5. These courses meet a very definite need in the State for those who wish instruction, but who cannot attend for a longer period of time, and who do not wish to take other subjects.

DIRECTORY OF INFORMATION

A. The College.

Those desiring college catalogues, the President's annual report, and other pamphlets giving full information relative to entrance requirements, courses of study, expenses, opportunities for student labor, and so forth, should address Robert A. Hawley, Secretary, Amherst, Mass.

All questions regarding admission to the college, either to the freshman class or to advanced standing, should be addressed to Prof. Arthur L. Julian, Assistant Dean, Amherst, Mass.

B. Experiment Station.

The Experiment Station conducts investigations in as many lines of agricultural science and practice as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and milk-testing apparatus. Branch stations in cranberry and market-garden culture are maintained in other sections of the State.

The station considers the farmers' problems to be its problems, and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspections, and for other information on the work of the station, should be addressed to Sidney B. Haskell, Director of the Experiment Station, Amherst, Mass.

C. The Graduate School.

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Dr. Charles E. Marshall, Director of the Graduate School, Amherst, Mass.

D. The Extension Service.

Inquiries of a general nature regarding the work of the Extension Service, extension publications, or requests for new lines of work should be addressed to Willard A. Munson, Director of Extension Service, Amherst, Mass.

E. Short Courses.

For information concerning the Short Courses, the Two-Year Course in Practical Agriculture, the Ten-Weeks Winter School, the Summer School, write or apply to Roland H. Verbeck, Director of Short Courses, Amherst, Mass.

MASSACHUSETTS AGRICULTURAL COLLEGE

THE TEN WEEKS' WINTER SCHOOL

1927



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AMHERST, MASS.

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THE TEN WEEKS' WINTER SCHOOL

January 3, 1927 to March 11, 1927

The Winter School has been maintained by the college for over twenty years. It meets a definite need in providing instruction for groups of men and women who can most conveniently leave the farm during the winter months. The school closes in time for students to return to take up the spring work.

In addition to the regular Winter School, the attention of the student is directed to the following special schools offered during the winter period:

The Winter Course in Fruit Growing.

The Winter Course for Greenskeepers and Golf Course Foremen.

The Vocational Poultry Course.

The Dairy School.

In order that the Winter School may serve as many people of the Commonwealth as wish to take advantage of it, no entrance requirements have been fixed other than that the student shall be at least eighteen years of age and shall have completed the elementary or common schools. The expenses are very moderate.

The instruction is thorough. The regular faculty teach the Winter School, assisted, if necessary, by additional instructors and lecturers from outside.

There are no required courses except in the special courses or groups listed above. The advice of the faculty in regard to the course may be had, but the students are left free to select the courses in which they are interested.

A social program is arranged for the Winter School in order that students may enjoy the advantages of college life. One of the most pleasant features of the Winter School in previous years has been the strong group spirit developed through wise leadership on the part of the student body.

The college does not guarantee positions, but frequently has calls for capable, energetic men and women with farm experience. Students interested in securing positions should consult the Supervisor of Farm Placement Training early in the winter. Employers who wish to secure the services of reliable men are also advised to take the matter up directly with the Supervisor of Farm Placement Training in the Short Course Office.

TUITION, FEES AND EXPENSES

There is a tuition fee of \$10.00 for the full Ten Weeks' Winter School and each student is required to pay to the Treasurer a \$5.00 registration fee in addition. There are no laboratory fees in connection with any of the courses. The registration fee and tuition fee, unless sent in advance, must be paid at the time of registration to the Treasurer of the college.

Board may be obtained at the college dining hall for approximately \$7.50 a week. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4 a week for each occupant.

Rooms for women may be secured in private homes. The Short Course Office will be glad to assist students in locating rooms.

REGISTRATION

Students will be registered in classes Monday, January 3, at the Short Course Office. Classes will begin Tuesday, January 4, at 8 o'clock A.M.

Each student wishing to register for the Winter School must furnish in advance the names and addresses of two citizens who will recommend him as to moral character. (See application blank in back of catalogue.)

Upon arrival the student should report at the office of the Director of Short Courses, located in South College; telephone 424.

RULES AND REGULATIONS

The choice of subjects is left to the student, but students are advised to elect not less than ten nor more than twenty-five hours per week except when a special school program is taken. All variations from this rule must be approved by the Director of Short Courses.

A class that meets for one hour a day for five days per week is reckoned as five credit hours. A two or three hour laboratory period counts as one class hour.

Information in regard to books used in the various courses will be given by the instructors at the first meeting of the class. The necessary textbooks may be purchased at the Treasurer's office.

As a guide to those who come to the college for the first time, the following extracts are taken from the regular rules of the college:—

The customary high standard of college men in honor, manliness, self-respect and consideration for the rights of others constitutes the standard of student deportment.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right not only to suspend, but also to name conditions under which students may remain in the institution.

Regularity of attendance and conformity to general college rules are required of all Winter School students.

THE LIBRARY

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is believed to rank with the best of its kind.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Short Course Students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this material. The librarian and library assistants are always on hand, ready and anxious to help.

THE INFIRMARY

The college maintains an infirmary for the care of sick or injured students. Students are urged to go to the infirmary when in need of the services rendered by the resident nurse or by a physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that students will go to the infirmary at his suggestion.

The infirmary fee is \$2 a day, and will be charged when one or more meals are obtained at the infirmary, or when the student remains at the infirmary for one or more nights.

SCHOLARSHIPS

The Jewish Agricultural and Industrial Aid Society of New York instituted in 1908 a system of free scholarships to enable the children of Jewish farmers to attend the short winter courses offered by the agricultural colleges in the states in which they reside. The scholarships are awarded by competition, which con-

sists in the writing of a brief essay on an agricultural topic. Children of Jewish farmers living and working on the farms of their parents are eligible to compete for these scholarships.

Applications for these scholarships should be made to The Jewish Agricultural and Industrial Aid Society, 174 Second Avenue, New York City.

POSITIONS

A student desiring a recommendation from the college must meet the following conditions:

1. He must be of good character.
2. His previous record must be good.
3. His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of farm experience cannot, as a rule, be recommended for positions of responsibility. This is especially true for the better positions for which managers or superintendents are wanted.

DESCRIPTION OF COURSES

GENERAL AGRICULTURE

Soil Fertility

A study will be made of the classification, properties and management of soils. Soil fertility in its broad aspects will be studied. On completing the course the student will be expected to know: the names of the most common soils; methods of moisture control; best tillage practices; value of organic matter; the effects of lime; and the composition, properties and uses of manures and commercial fertilizers. Two class hours and one two-hour laboratory period a week.

Mr. C. H. Thayer

Field Crops

A course dealing primarily with the importance and production of field crops under Massachusetts conditions. Special consideration will be given to such factors as the use of rotations, culture methods, harvesting, and varieties. Practice in seed selection for purity and germination, and in judging such crops as corn and potatoes, will be included. Course one is required. Two class hours and one two-hour laboratory period a week.

Assistant Professor Cubbon

Types and Breeds of Live Stock

Outlines of the market classes and grades of beef cattle, horses, sheep, and swine, placing emphasis upon the characteristics of each class and its adaptations. The characteristics, the adaptations, and so far as is possible the historic development of each of the more important breeds of live stock are also carefully studied, as well as their distribution in America. Special emphasis is laid upon dairy cattle and horses in the judging work. Three class hours and two two-hour judging periods a week.

Live Stock Feeding

A study of the physiology of nutrition, the composition of feedstuffs, and of rational economic feeding. The feeding of dairy cattle and their management for profitable milk production receives first attention. Similarly, the feeding of horses, of beef cattle, of sheep, and of swine is studied. Three class hours a week.

Assistant Professor Glatfelter

Animal Breeding

A discussion of the more common problems pertaining to the breeding of live stock, their explanation and solution; in-breeding; cross-breeding; grading. The

work of the most successful men in history is studied. Time is given to the study of pedigrees of the different breeds of dairy cattle and other stock. Three class hours.

Assistant Professor Rice

Farm Management

A study of some of the problems of modern farming and the factors that influence success, such as the choice of a region and of a farm, types of farming, size of farm, rotation of crops, and labor problems. Two class hours a week.

The Department

Farm Accounts

Actual practice in the use of a simple system of farm accounting, including cost accounts suitable for the large or the small farm. Two two-hour laboratory periods a week.

The Department

Farm Motors

This course deals with the gasoline engine as used for stationary work, automobiles, and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing. Three class hours and two two-hour laboratory periods a week.

Professor Gunness and Mr. Pushee

Dairy Bacteriology

The characteristics and functions of bacteria and their relation to the different branches of the dairy industry. The scientific basis for cream ripening, sterilization, pasteurization, control of fermentation, and the production of the best quality of market milk. Two class hours and one two-hour laboratory periods a week.

Professor Marshall and Miss Garvey

Animal Diseases

This course acquaints the student with the more common diseases to which domesticated animals are susceptible. Attention is given to conditions favoring diseases, communicable diseases in particular, and to prophylactic measures, in order that the student may be able to reduce the prevalence of diseases among animals in his charge. Five class hours a week.

Dr. Lentz

Poultry Diseases

This course is planned for students specializing in poultry work. Anatomy and physiology of the domestic fowl are briefly considered, and particular attention is devoted to the diseases which may cause heavy losses in the flock. Prevention rather than cure is emphasized. Two class hours and one laboratory period per week.

Professor Sanctuary

Poultry Husbandry

This course meets the needs of those who can spend only a short time at the college, but who wish to get a general survey of poultry keeping and some technical knowledge of the latest and most scientific methods in vogue. It is a lecture and laboratory course, the former covering opportunities in poultry culture, poultry housing, winter egg production, incubation and brooding, feeds and feeding, poultry management, and the most popular methods of marketing poultry and eggs in Massachusetts. The laboratory work consists of demonstrations and practical work in killing, picking, caponizing, judging and culling for egg production, and studying types and construction of incubators and brooders. Practical work in operating incubators is given to as many as can be accommodated. The large poultry plant furnishes facilities for demonstrating various methods of



Mixing Fertilizer



Studying Field Crops

housing and feeding. A splendid opportunity is afforded to those who have time for observation work outside of class hours. Five class hours and one two-hour laboratory period per week.

Professor Banta

Vegetable Gardening

The successful commercial production of vegetables requires a clear understanding of the problems that the vegetable grower meets. Practical contact is made with the problem in so far as the season of the year and time devoted to the work permit. Classroom instruction makes clear the fundamental principles underlying the problem, and gives opportunity for discussion. The laboratory periods aim to give the student practice in applying the fundamental principles to the problems he is to meet as a commercial vegetable grower. Some of these will be discussed under the leadership of market gardeners and specialists.

Students electing this course are required to take soil fertility and it is recommended that they take botany and entomology. Three class hours and two two-hour laboratory periods a week.

Mr. Stout

TEN WEEKS' WINTER COURSE IN FRUIT GROWING

MASSACHUSETTS AGRICULTURAL COLLEGE

AMHERST, MASS.

January 3 to March 11, 1927

A specialized course in fruit growing intended for persons who are interested in the growing of fruit for profit.

The work will require practically all of the student's available time while at the college and every student is expected to take all the courses offered.

Enrollment is limited to fifteen students.

TABLE OF REQUIRED COURSES

Course	Class Hours	Laboratory Periods	Total Credits
I. Tree Fruits	4	1	5
II. Pruning	2	2	4
III. Spraying	3	1	4
IV. Small Fruits	3	—	3
V. Harvesting and Marketing	2	2	4
VI. Farm Motors	3	2	5

Description of Courses

I. Tree Fruits.

A study of fundamental problems connected with the production of apples, pears, peaches, plums, and cherries. The course includes a consideration of such questions as the selection of varieties, propagation, purchasing and handling nursery stock, planning and setting an orchard, the care of young trees, and the management of bearing orchards.

Students are given practice in the identification of common varieties, in selecting fruit for show purposes, in judging, and in the most useful methods of budding and grafting. Four class hours and one two-hour laboratory period a week.

Mr. French

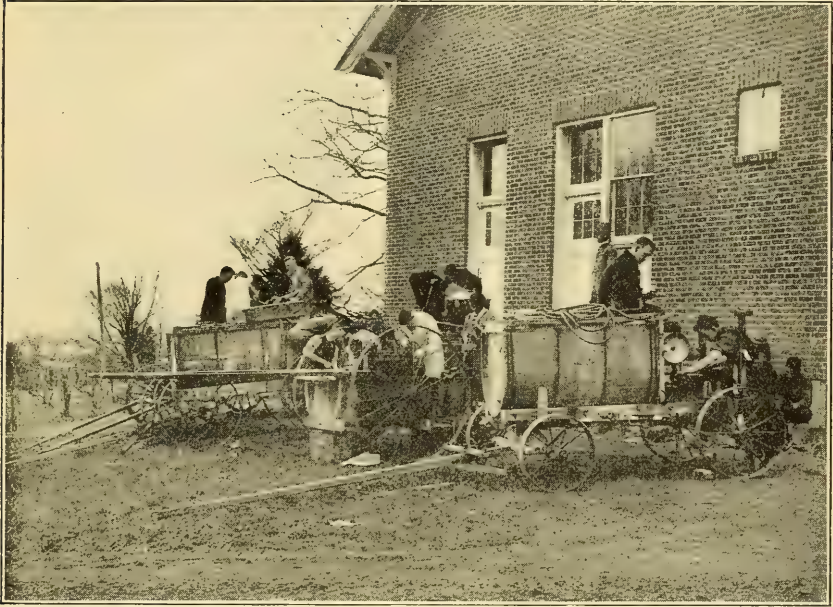
II. *Pruning Tree Fruits.*

A consideration of modern methods of pruning apples, pears, peaches, and other tree fruits. In addition to class room discussions, students are required to prune trees in the orchards until familiar with the pruning of each fruit. Related subjects are studied also, such as the relation of pruning to fruit bearing, the best types of pruning tools, dressings for pruning wounds, and the care of topworked trees. Two class hours and two two-hour laboratory periods a week.

Mr. Roberts

III. *Spraying.*

A thorough study of modern methods of pest control in orchards. Spray pumps, nozzles, spray guns, and other spray machinery are examined and operated, and spray materials are made and studied. The damage done by common orchard insects and diseases is considered, and their life histories are studied in relation to



Studying Orchard Spray Rigs

control methods. Attention is given also to the development of spray schedules for common fruits. A good assortment of modern sprayers ranging from types of hand machines to heavy power outfits is available for study and trial. Three class hours and one two-hour laboratory period per week.

Mr. Roberts

IV. *Small Fruits.*

This course deals with all the principal small fruits grown in Massachusetts, such as strawberries, raspberries, blackberries, currants, and grapes. It attempts to answer such questions as: What varieties are best adapted to our Massachusetts conditions? How shall we prune our grapes, raspberries and blackberries? What method of training will give the best results? How can we control the pests which attack these fruits? What type of culture and fertilizing is best for each of them? When and how should we harvest them, and how should we pack and market them in order to secure the highest prices? Three class hours per week.

Professor Sears

V. *Harvesting and Marketing.*

This course is concerned with the handling of fruits from the tree to the consumer. The picking, grading, packing, storing, and marketing of fruits are considered in detail, and practice in grading and packing apples is continued until a fair degree of skill is acquired.

Grading laws are studied and discussed, also such subjects as types of storage, storage troubles and how to avoid them, sizing machines, packages and their uses, and markets and market requirements. Two class hours and two two-hour laboratory periods per week.

Professor Van Meter

VI. *Farm Motors.*

This course includes study and practice work with the types of gasoline engines commonly used on fruit farms. Lectures and textbook assignments deal with the theory and construction of stationary engines, automobiles and tractors, and their practical operation is studied in the laboratory. Special attention is given to overhauling and repairing. Three class hours and two two-hour laboratory periods per week.

Professor Gunness and Mr. Pushee

Horticultural Manufactures

The utilization of culls and low-grade fruits and vegetables, and the marketing of excess crops are always serious problems to the producer. The economic conversion of these materials into palatable nutritious food products is becoming a greater necessity each year.

This course aims to place before the student the fundamental principles underlying the various means of food preservation and the manufacturing of food products.

The canning, drying, and storage of fruits and vegetables, together with the manufacture of many of their products, will be studied in detail, and the methods illustrated with laboratory exercises. Students will be given opportunity to do canning and drying, to manufacture many fruit and vegetable products, and to investigate storage conditions. The work in both classroom and laboratory will be of such a character as to be readily applied in the home or in the farm factory. Two class hours and two laboratory periods per week.

Prof. Chenoweth and Mr. Robertson

Floriculture

This course is outlined primarily for students who are interested in commercial floriculture. Some of the subjects considered are: greenhouse construction and heating, greenhouse management, culture of the important commercial crops, and floral arrangement. A portion of the course will be devoted to a consideration of gardening and garden flowers. Special trips are taken to study floricultural establishments in the State; students desiring credit for the course are required to take these trips. A series of lectures will be given by men who are engaged in various phases of floricultural work. Students taking this course are required to take soil fertility, and it is recommended that they take vegetable gardening, botany, and entomology. Five class hours a week; laboratory work or field trips by arrangement.

Professor Thayer, Assistant Professor Muller and Mr. Hubbard

The Supply and Marketing of Farm Products in Massachusetts

Marketing Farm Products. — A critical description of the methods of selling and handling farm products used by successful New England farmers and farmers' associations. Among the problems to be considered are those of grading, storing,



Nursery Practice



Class Work in Greenhouses

transporting, factors influencing prices, and the importance of efficient marketing in increasing farm income. Two class hours per week.

Miss Foley

Botany

A study of the structure, functions, and diseases of greenhouse, garden, orchard, and field crops, together with methods of disease prevention, including spraying and the application of fungicides. Two class hours a week.

Assistant Professor McLaughlin

Entomology

The course in entomology covers the topics outlined below. It is aimed to cover the fundamentals of the subject rather fully. Time will permit the discussion of only the more important of the injurious and beneficial insects with which we have to deal in this section of the country.

1. Insects and their nearest relatives — how to distinguish them.
2. Structure or make-up of insects and the practical application of this knowledge in insect control.
3. Development, metamorphoses (changes), and stages of insect life.
4. Composition, preparation, combination, and use of insecticides, fumigants, etc.
5. Spraying apparatus and its use.
6. Beneficial and injurious insects.
 - A. The life history, habits, behavior and control of some of the most important insect pests.
 - B. Beneficial insects.

Three class hours a week.

Assistant Professor Alexander

Rural Sanitary Science and Hygiene

Significance of sanitary science in the relation to health; the theories of disease; air and ventilation; water and its protection; sewage disposal and purification; foods, their care, preservation, decomposition, and nutrition; vaccines and serum treatment; carriers of disease, immunity, and susceptibility; infectious diseases; disinfection and care of infectious diseases. Two class hours a week.

Professor Marshall

Agricultural Opportunities for Women

A course for the woman who is interested in agriculture and who wishes to know what opportunities are open to her in that field. A study will be made of the types of agricultural work for which women are best adapted; of the special problems which will confront them in such work and how these may be met. Two class hours per week.

Miss Hamlin

HOME ECONOMICS COURSE FOR HOME MAKERS

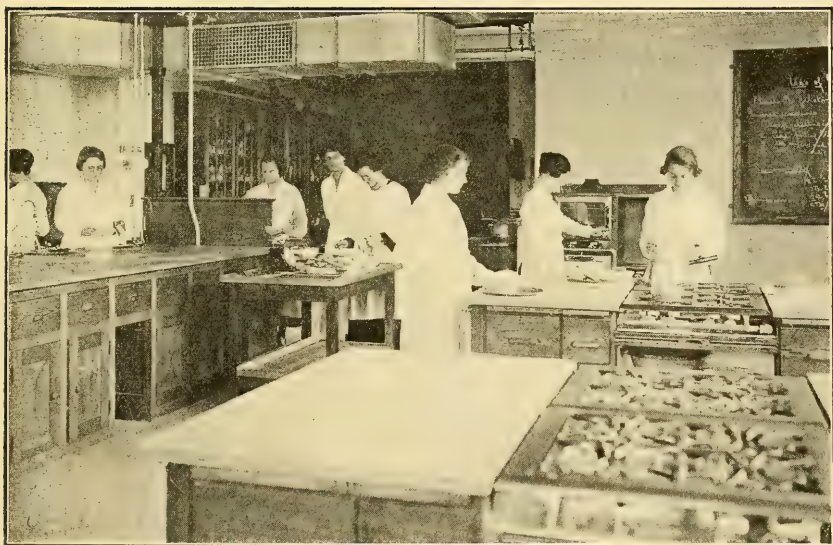
Food for the Family

In all families the largest expenditure of time, money and labor must go to the preparation and serving of food. This course aims to assist in the buying and preparation of such foods as will tend to keep the family well. Emphasis will be given to the feeding of babies and children, school lunches, the planning and preparation of meals to satisfy taste, health and pocket-book. Two class hours and three two-hour laboratory periods a week.

Miss Knowlton



Table Decorations by the Class in Floriculture



A Course in the Cooking School

Clothing for the Family

Every woman wishes her family and herself to be suitably and attractively dressed. This course will cover the buying, making and caring for clothing for the family. There will be practical work in making garments, with emphasis on the selection of suitable materials of good value and on short cuts and easy methods of construction. Two class hours and three two-hour laboratory periods a week.

Miss Tucker

Family Health

The aim of this course is to teach how to keep the family well. This will include ways of living to prevent sickness, the care of the family in case of unavoidable sickness, and the right attitudes towards health. Three class hours a week.

Miss Skinner

Home Management

A home which runs smoothly is the ideal of every woman. This course aims to assist in such ways as these:—selection and care of equipment, study of best ways of working, use of time and labor-saving devices and securing the largest measure of satisfaction in spending the family income. Five class hours a week.

Miss Skinner

VOCATIONAL AGRICULTURAL TEACHING

The Massachusetts Agricultural College has been designated by the Massachusetts Department of Education as the institution for training teachers of vocational agriculture for the State. The work is being carried along the following lines:

1. Regular college courses, four or five years, leading to a degree.
2. Shorter courses to supplement the training of more mature men who are partly qualified through practical experience, or through scientific study of agriculture, or through study of methods and principles of education, or through teaching experience.
3. Professional improvement training for employed teachers in regular college courses, courses in the winter term, or courses specially organized on request of a sufficient number of students.

The Winter Short Course period provides in part for the second and third lines. An intensive course during the first two weeks is provided for the instructors who may leave their teaching for only a brief period. This course may be continued on a higher schedule for such persons as may be able to remain throughout the winter term.

For all of these there will be an opportunity to take courses in general agricultural teaching, special Massachusetts problems, and agricultural subject-matter. An attempt will be made to furnish any subject-matter course which enough men may request.

High school principals and science teachers who have had farm experience, or practical agriculturists, may find this an opportunity to qualify for vocational teaching, — a field in which the demand is fairly strong.

The educational courses supplemented by an adequate amount of agriculture will be credited by the Department of Education towards approval of candidates or for professional improvement programs. Similar courses are offered in the summer school.

The following courses have proved to be of greatest benefit to those enrolled at this time:

Principles and Methods of Teaching

The course is of most benefit to those who expect to teach or who are teaching. It covers some of the general principles and methods of teaching and their application to particular cases. This latter means a study of cases in school work,

taken from actual experience, analyzed and illustrated by the class. Outside reading beyond the text in hand is required. By arrangement with the instructor, Winter School students may come into the regular class. Five class hours per week.

Professor Welles

Special Methods in Vocational Agricultural Teaching

This course consists of intensive work on the important principles underlying the successful teaching of vocational agriculture and a thorough study of the special plans and activities of the teacher of this subject. The job is analyzed to determine what the teacher must know as to character, setting, technique, and relations of his work. All available sources are consulted for information as to State requirements, industrial conformity, and professional ideals. Illustrative material showing how particular departments and schools work out their problems in this subject is gathered and studied. Plans for the year's work, unit study and daily lessons are worked out on the home-project basis. Special lessons are planned and taught by students in moot class.

In case both experienced and untrained men apply for this course, the group may be divided into two sections. Five class hours per week.

Professor Welles

Agricultural Teaching Improvement Problems in Massachusetts

A seminar course for employed teachers or directors of vocational agriculture, dealing with problems which constantly arise in the agricultural schools of the State. Prospective teachers may be admitted by special arrangement. Includes plans for the coming season, and campaigns for improved methods based on experiences and needs of men in service; for this season special emphasis on summer teaching of related subjects, and the proper approach to teaching a vocational topic.

Class meets for double periods five days each week for two weeks. The class will continue for a longer term at four days each week if there is a sufficient demand.

Mr. Heald

TEN WEEKS' COURSE FOR GREENSKEEPERS

A specialized course for men engaged in the profession of greenskeeping, or members of greens committees. This course has been arranged in cooperation with the New England Greenskeepers' Club, and the subjects as outlined can be effectively studied during the winter months.

General Requirements

Applicants for this school must be members of the greens committee, greenskeepers, or must have had at least one year's experience on a golf course, and their application blanks must be countersigned by the greenskeeper and chairman of the greens committee.

No entrance examinations are required, but it is expected that the student will have a reasonable education in the English language.

The number of students is limited to ten, and registration will be confined to citizens of Massachusetts until December 1, 1926. After that date, if there be vacancies, out-of-state students will be admitted in order of the filing of their applications.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student for misconduct, or failure to properly meet the requirements of the course.

Applicants may register for one or more of the courses offered, but will not be permitted to enroll after the course has started.

The winter school certificate will be given to those who complete the full course with credit.

COURSES OFFERED

					Credits
I.	Motors	25 Ex.	Jan. 3-Feb.	4	2½
II.	Water Systems	30 Ex.	Jan. 3-Feb.	11	3
III.	Soils and Fertilizers	20 Ex.	Feb. 14-Mar.	11	2
IV.	Equipment	35 Ex.	Jan. 3-Feb.	18	3½
V.	Reference Reading and Record Keeping	15 Ex.	Feb. 21-Mar.	11	1½
VI.	Grasses and Grass Seed	30 Ex.	Jan. 3-Feb.	11	3
VII.	Cost Keeping and Analysis	20 Ex.	Feb. 14-Mar.	11	2
VIII.	Fundamentals of Landscape Arrangement	20 Ex.	Feb. 14-Mar.	11	2
IX.	Individual Problem	20 Ex.	Jan. 3-Jan.	28	2
X.	Drainage	25 Ex.	Feb. 7-Mar.	11	2½

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Description of Courses

I. *Motors*. — This course deals with the gasoline engine as used for stationary work, automobiles and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing. 15 class exercises. 10 laboratory exercises.

Professor Gunness and Mr. Pushee

II. *Water Systems*. — A study of standard types of water systems, with particular reference to the relation of size of pipe, pressure and nozzles, to the flow and delivery of water. 10 class exercises. 10 laboratory exercises.

Professor Gunness

III. *Soils and Fertilizers* (special for greenskeepers). — The main topics for discussion will be: the composition, classification and properties of soils; moisture relationships; the effect of organic matter; the use of lime and fertilizers; and other factors influencing the growth of grasses. The main theme of the course will center on the question of how to feed grass plants successfully. 24 class exercises. 6 laboratory exercises.

Assistant Professor M. H. Cubbon

IV. *Equipment*. — A study of the major equipment used on the golf course, with particular reference to mowers (fairway and putting green), spraying equipment and compost mixers. A very thorough study of lawn mowers will be made in this course. All types of mowers are available for study. Minor equipment will also be discussed. 20 class exercises. 20 laboratory exercises.

Assistant Professor L. S. Dickinson

V. *Reference Reading and Record Keeping*. — This course will enable the student to have very complete data for reference. 15 exercises.

Assistant Professor L. S. Dickinson

VI. *Grasses and Grass Seed*. — This course will enable the student to identify the various grass and weed seeds usually found in seed mixtures. The relative germination of grass seeds will be demonstrated and applied to their uses for golf and tennis court purposes. The soil and fertilizer requirements of the various grasses will be discussed. 10 class exercises. 20 laboratory exercises.

Assistant Professor L. S. Dickinson

VII. *Cost Keeping and Analysis*. — The value of cost keeping and its analysis will be demonstrated, and a method of cost keeping will be taught. The many factors that enter into the cost will be noted, analyzed and adopted to individual problems. The distribution and directing of the workmen will also be studied. 20 class exercises.

Assistant Professor L. S. Dickinson

VIII. *Fundamentals of Landscape Arrangement of Trees, Shrubs and Walks.* — This particular course will be divided into two parts.

(1) Principles of Landscape Arrangement, particularly adapted to golf club houses. Desirable varieties of shrubs and trees and their adaptability to various soils and weather conditions. 7 class exercises. 7 laboratory exercises.

Instructor L. B. Arrington

(2) Shrubbery pruning and fertilizing and road and walk maintenance. 3 class exercises. 3 laboratory exercises.

Assistant Professor L. S. Dickinson

IX. *Individual Problem.* — Each student is expected to bring to this course the problem that has been troubling him or his greenskeeper. This problem will be worked out during the course by the student under the direction of the instructor. 20 class exercises.

Assistant Professor L. S. Dickinson

X. *Drainage.* — The entire problem of land drainage will be discussed and practical problems worked out. The student will be taught the use of the level and how to set ditch grades. 15 class exercises. 10 laboratory exercises.

Professor C. I. Gunness

WINTER SHORT COURSES IN DAIRYING

January 17 to February 25, 1927

STAFF OF INSTRUCTION

J. H. FRANDSEN, M.Sc., *Professor of Dairying.*

R. W. SMITH, JR., M.Sc., *Ass't. Professor of Dairying.*

M. J. MACK, M.Sc., *Instructor in Dairying.*

In addition to the above, specialists in the commercial field will be secured to help with the laboratory work and discussion.

CALENDAR, JANUARY 17, 1927, TO FEBRUARY 26, 1927

Course I. Testing, Analyzing and Inspecting Dairy Products, Monday, January 17, 8 A.M., to Friday, January 28, 12 M.

Course II. Milk Plant and Creamery Operation, Monday, January 31, 8 A.M., to Friday, February 11, 12 M.

Course III. Ice Cream Making, Monday, February 14, 8 A.M., to Friday, February 25, 12 M.

GENERAL INFORMATION

To meet the ever-increasing demand for trained men in the dairy industry, the Massachusetts Agricultural College is offering a series of ten-day courses in dairying. These courses will be offered between January 17 and February 25, 1927. The courses cover the underlying principles of milk plant operation and ice cream, butter and cheese making, special emphasis being placed on milk plant and ice cream operations, and on the testing, analysis and inspection of dairy products.

Many a milk plant or creamery operator, superintendent, or foreman would be more efficient and would get more satisfaction out of his work if he fully understood the fundamental reasons concerned with the successful operation of his dairy plant.

It is the man who wants to know more about his work, and who is anxious to become expert enough to advance in it, that plant operators can more profitably encourage to take these courses. Owners of dairy plants sending men of this type will profit principally through the fact that the men will learn economy of operation resulting in a saving of labor, and better handling and processing methods resulting in a better and more uniform product. The courses are purposely given at a time of year when help can most easily be spared.

The courses are intended not only for experienced creamery or milk plant men but for men having little dairy experience. Those who are inexperienced should plan to take all of the courses. Farm men and women who are responsible for milk handling, butter making, or the making of soft cheese will also find these courses adapted to their needs.

The courses are so arranged that a student can report for the first course on January 17 and take all the courses in succession, finishing February 25, or he can take any course separately. There are no prerequisites in any course. A certificate showing the subject studied is given at the end of each course to those doing satisfactory work.

Admission. — There are no entrance requirements except that the student must be eighteen years of age, and must have a common school education.

Registration. — Students should enroll by mail. See application blank in back of catalogue.

Enrollment for Course I, "Testing, Analyzing and Inspecting Dairy Products," must be made by January 15, 1927. Those failing to enroll by mail may enroll on January 15. Students should arrive January 16 as classes begin at 8 A.M., January 17.

Enrollment for Course II, "Milk Plant and Creamery Operation," must be made on or before January 29.

Enrollment for Course III, "Ice Cream Making," must be made on or before February 12 and should be made by mail by *February 1*, as it will be necessary to limit the size of the class if it gets too large. Those enrolling first will be given preference. *Note:* A second course will be given if the number of students warrant it.

All applications for entrance to these courses should be addressed to the director of Short Courses, Massachusetts Agricultural College, Amherst, Mass.

Upon arrival the student should report at the office of the Director of Short Courses in South College, telephone 424, for information concerning rooming accommodation.

Tuition, Fees and Expenses. — There is a tuition fee of \$2.00 for each course, and each student is required to pay the Treasurer a registration fee of \$2.00 per course. These fees must be mailed with the application.

Students will need white suits for laboratory work, and may wish to purchase one or more textbooks for each course.

Board may be obtained at the college dining hall for approximately \$7.50 a week. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4.00 a week for each occupant.

Positions. — The dairy department is often called upon to recommend candidates for positions, and stands ready to recommend those who take these courses with the idea of getting positions, providing they are of good character, have good previous records, and do satisfactory work in the courses.

Methods of Instruction. — Instruction is given (1) by lecture, by recitation and discussion, and by the working out of problems; (2) by practical work in the laboratories. In general, two one-hour periods each day will be allowed for discussion and two three-hour periods for laboratory work. The student is expected to give practically the entire day from 8 A.M. to 5 P.M. to his work. The services of the entire department are available at different times for men taking these courses.

Flint Laboratory. — The dairy building is practically new, and with its equipment stands as one of the best college dairy buildings in the country. The testing laboratory is spacious and is well equipped for testing milk and its products. Equipment includes a Mojonnier Tester. About 1,000 quarts of milk are received daily, and the market milk department is equipped to weigh, clarify, pasteurize, cool and bottle this milk.

There is a ten-ton compression refrigerating system in the building arranged for making ice, freezing ice cream and cooling the ice-cream hardening box. The ice-cream room contains two brine freezers and one tub freezer, a mixing tank, emulsing and viscolizing outfits, a filling machine, and other smaller equipment. The butter department is equipped with power and hand churns of different makes, starter-making equipment, pasteurizers, and various makes of separators. The cheese room is equipped to make cheese of all kinds, and especially soft cheese.

Description of Winter Courses

Course I. Testing, Analyzing and Inspecting Dairy Products (January 17-28).

This course is designed to help men and women to become more proficient in operating the Babcock test, lactometer acid test, over-run test and moisture test, and the Mojonnier test, as well as other tests commonly used in the testing, analyzing, or inspecting of dairy products.

The course will also offer opportunity for securing the latest information of value to those who plan or are now engaged in some phase of dairy work.

Course II. Milk Plant and Creamery Operation (January 31-February 11).

This course is designed to help milk plant and creamery employees to a better understanding of economy of operation and uniformity of product. It will help prepare men to be foremen and superintendents in milk plants.

Some of the lecture and discussion topics are: general scope of the market milk industry, value of milk as a food, relation of bacteria to milk, sanitary production, marketing, plant construction and selection of equipment, processing delivery, handling surplus, standardizing, grading and labeling, and care of milk in the home.

Laboratory exercises will cover milk sampling, the scoring of dairies, cream line problems, the scoring of milk, the study of milk plant equipment, milk processing, the manufacture of cottage, neufchatel, and cream cheese and butter.

Practical application of dairy tests and of lecture work will be carried out in the college creamery and dairy barn.

Course III. Ice Cream Making (February 14-25).

This course aims to present the most up-to-date information on ice cream making and fit men to operate or take charge of operating any part of the ice cream business.

Lectures and discussions will cover the selection of ingredients for the mix, standardizing and calculating the mix, processing the mix, factors influencing the yield, causes and remedies of ice cream defects, the manufacture of brick ice cream, special ice creams and fancy molds, marketing ice cream, and the handling of ammonia refrigerating plants.

Laboratory exercises will include work on the whipping properties of different creams, tests of ingredients used in the mix, study of ice cream equipment and its operation, calculating and making up of the ice cream mix, effect on the quality of ice cream of such factors as fat content, solids not included in the fat content, temperature of the mix, temperature of brine, age of the mix, speed of the dasher, treatment of the cream or mix, and making various kinds of frozen delicacies.

THE TWO-YEAR COURSE IN PRACTICAL AGRICULTURE

The Two-Year Course in Practical Agriculture is intended for men and women who desire a working knowledge of the best methods in farming but who cannot spend four years in college. An applicant for admission must be at least 17 years of age and must have a common school education.

There is a tuition fee of \$20.00 per term, or \$60.00 per year, for residents of Massachusetts; others are charged \$60.00 per term, or \$180.00 per year. All students must pay small laboratory fees in several courses.

The course is so organized that each student specializes along one of the following lines: animal husbandry, poultry, dairy manufactures, general horticulture, fruit growing, floriculture, or vegetable gardening. Each specialized course is intensive, with emphasis on practical work under competent supervision. It covers two winters and the intervening summer. The first year is made up of six months of study at the college followed by six months of practical farm experience on selected farms. Nine months more of study at the college completes the course. Each student, at graduation, receives a certificate showing the subject studied.

A ONE-YEAR VOCATIONAL COURSE IN POULTRY HUSBANDRY

January 3 to December 17, 1927

J. C. GRAHAM, W. C. SANCTUARY, LUTHER BANTA, MISS MARION PULLEY

The One-Year Vocational Poultry Course is designed to meet the needs of those who wish to specialize in this branch of agriculture, but who can spend only one year at the college. The course is vocational in its nature, the plan of which is to "learn to do by doing."

In addition to Poultry courses 1 and 2, students elect enough collateral work from Course 4 to make a total of 18 to 20 credit hours. From the close of the Winter School, about March 10, until college closes, the latter part of June, they devote all of their time to poultry work. During the summer vacation, students have an opportunity to secure additional practical experience on general or specialized farms. With the opening of college in the fall, students again devote all of their time to poultry work, finishing the course at the end of the fall term, the latter part of December. As the busy season with poultrymen begins soon after the first of the year, the students, by finishing the course before the holiday season, are ready to accept attractive positions or enter business for themselves.

Courses of Study

Course 1. II. Introductory Course. — This course covers a general survey of the poultry industry of the United States as a whole. Particular emphasis is laid upon the operation and possibilities of profitable poultry keeping in New England and the part poultry should play in the development of New England agriculture. 2 class hours per week. 2 credits.

Course 2. II. Poultry Breeding. — This is a very practical course covering the improvement of poultry by means of mass selection and pedigree breeding. The laboratory work enables the student to follow through, step by step, eggs from a pedigreed flock from the time they are laid until the hatched chick is banded. 3 class hours, 2 two-hour laboratory periods per week. 5 credits.

Course 3. II. Poultry Diseases. — This course endeavors to acquaint the student with the sanitary conditions under which poultry thrive best; the difference between normal and abnormal (disease) physical conditions; the nature and use of disinfectants and antiseptics; and the most modern sanitary practices in keeping flocks free from disease. 2 class hours. 1 laboratory period. 3 credits.

Course 4. II. Supplementary Courses. — Each student shall elect from the Winter Short Course or Two Year courses under the direction of the Depart-

ment Head from 10 to 15 credit hours. Courses from the following departments are suggested: Farm Management, Market Gardening, Agricultural Engineering, and Pomology.

Course 5. III. Poultry Feeding. — This course includes a study of common poultry feeds and the most important principles underlying successful feeding practices on commercial farms. The laboratory work includes the care of a pen of birds for a few weeks in order to familiarize the student with the best practices and allow him to get first hand knowledge on the results of his work. 3 class hours. 2 laboratory periods, 5 credits.

Course 6. III. Incubation and Brooding. — Practical lecture and laboratory course in incubation, brooding and growing chicks. Students obtain a



Constructing a Poultry House

knowledge of the fundamental principles underlying these two processes and receive practice in operating both small and mammoth incubators and various types of brooders. 2 class hours. 3 two-hour laboratory periods. 5 credits.

Course 7. III. A conference, observation and general reading course equivalent to 1 or 2 recitations per week. In this course the student becomes acquainted with the best literature on poultry through books, station bulletins, scientific articles, poultry magazines, etc. 1 or 2 class hours. 1 or 2 credits.

Course 8. III. Plant Practice. — This course covers a large number of very practical operations not listed under other courses such as: — special work in incubation, pedigreeing, preparation of baby chicks for shipment, caponizing, repairing and making equipment for range and houses and the solution of problems connected with poultry management in general. Work equivalent to 5 credit hours.

Course 9. I. Poultry Judging and Housing. — This course covers a study of the economic breeds and varieties of poultry and lays special emphasis upon what is known as culling; that is, a careful interpretation of physical characteristics of poultry in their relation to egg production. This course also covers the subject of poultry housing, including designing, types, construction, fixtures and relative costs. 3 class hours. 2 laboratory periods. 5 credits.

Course 10. I. Marketing. — This course acquaints the student with market qualifications of poultry and eggs and the requirements of our eastern market centers. The laboratory work covers the grading, packing and judging of eggs and dressed poultry. A special requirement of this course is the fattening of one or more pens of poultry and the keeping of special data on same. Assisting with the Annual Market Poultry Show is an important part of this course. Equivalent to 2 lecture and 2 laboratory periods. 4 credits.

Course 11. I. This course consists of a discussion of a series of logically arranged problems covering the field of Poultry Farm Organization and Management. Much of the work centers about projects of the individual student. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit. 4 class hours and the equivalent of 1 2-hour laboratory period. 5 credits.

THE SIX WEEKS' SUMMER SCHOOL

The Summer School at the Massachusetts Agricultural College has been a feature of the short course work for the past nineteen years.

In 1924 for the first time the school was operated on a college credit basis, only graduate and under-graduate work being offered.

For 1927 the Summer Session will begin July 5 and close August 12. The following courses were offered during the past summer:

Collegiate Courses

- Education
- Home Economics
- Science and Allied Subjects

Freshman and Preparatory Courses

Sub-freshman courses for college entrance credit:

- English, Algebra, Composition

Courses in Education and Allied Subjects

- Methods of Teaching English in the High School
- Methods of Teaching and Supervision of Mathematics
- General Psychology
- Advanced Educational Psychology
- Tests and Measurements
- Modern Philosophy of Education
- Content and Methods in Social Studies in High School
- Principles and Methods of Teaching
- Special Methods in Teaching Vocational Agriculture
- Supervised Teaching
- Principles of Secondary Education
- The Employed Teacher of Agriculture
- Vocational Education

Courses in Home Economics

- Clothing
- Foods
- Millinery
- Methods of Teaching Home Economics
- Nutritional Phases of Health Education
- Textiles

Science and Allied Courses

Food Preservation

General Science

Studies in Science

Public Health

Dramatic Presentation

Design and Practical Arts

Flower Growing

Botany for the Teacher

Cultivated Trees and Shrubs

Tuition fee \$10.00 for six weeks' term. All other expenses very moderate.

For catalog, write Director of Short Courses, Massachusetts Agricultural College, Amherst, Mass.

THE M. A. C. BULLETIN AMHERST, MASSACHUSETTS

VOLUME XIX JANUARY, 1927 NUMBER I

PUBLISHED EIGHT TIMES A YEAR BY THE MASSACHUSETTS
AGRICULTURAL COLLEGE: JAN., FEB., MARCH, MAY,
JUNE, SEPT., OCT., NOV. ENTERED AT THE POST
OFFICE, AMHERST, MASS., AS SECOND CLASS MATTER

THE SIXTY-FOURTH ANNUAL REPORT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE

PART II. — CATALOGUE OF THE COLLEGE FOR 1926-1927



The Commonwealth of Massachusetts

MASSACHUSETTS AGRICULTURAL COLLEGE,
AMHERST, November 30, 1926.

To the Commissioner of Education.

SIR:— On behalf of the trustees of the Massachusetts Agricultural College I have the honor to transmit herewith Part II of the sixty-fourth annual report of the trustees for the fiscal year ended November 30, 1926, this being the catalogue of the college.

Respectfully yours,

EDWARD M. LEWIS,
President.

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Without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. — *Act of Congress, July 2, 1862.*

THE COLLEGE CHARTER. — "The leading object of the college shall be to teach subjects relating to agriculture and the mechanic arts, so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics." — *From Chapter 75 of the General Laws of Massachusetts.*

This issue of the catalogue represents the status of the college for the current college year, with provisional announcement of courses of study and other matters for the year to follow. When deemed necessary, additional announcements are made in a supplementary bulletin, published in the spring.

The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue.

CALENDAR.

1926-1927.

1926.

September 13, Monday	Fall term begins for Freshmen
September 15, Wednesday	Fall term begins for all except Freshmen
October 12, Tuesday	Holiday — Columbus Day
November 24-29, Wednesday, 12 M.—Monday, 7.30 A.M.	Thanksgiving Recess
December 18, Saturday, 12 M.	Fall term ends

1927.

January 3, Monday, 7.30 A.M.	Winter term begins
February 22, Tuesday	Holiday, Washington's Birthday
March 19, Saturday, 12 M.	Winter term ends
March 28, Monday, 7.30 A.M.	Spring term begins
April 19, Tuesday	Holiday, Patriot's Day
May 31, Tuesday	Holiday, Observance of Memorial Day
June 10-13, Friday-Monday	Commencement
June 16-18, Thursday-Saturday	Entrance Examinations
September 7-10, Wednesday-Saturday	Entrance Examinations
September 12, Monday	Fall term begins for Freshmen
September 14, Wednesday	Fall term begins for all except Freshmen
October 12, Wednesday	Holiday, Columbus Day
November 23-28, Wednesday, 12 M.—Monday, 7.30 A.M.	Thanksgiving Recess
December 17, Saturday, 12 M.	Fall term ends

1928.

January 3, Tuesday, 7.30 A.M.	Winter term begins
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MASSACHUSETTS AGRICULTURAL COLLEGE.

HISTORY. — The Massachusetts Agricultural College was organized under the national land grant act of 1862. This legislation is also known as the Morrill act, the original bill having been framed by Justin Smith Morrill, Senator from Vermont, and its final enactment secured under his leadership. It provided that public lands be assigned to the several States and territories, the funds from the sale of which were to be used to establish and maintain colleges of agriculture and mechanic arts. The Massachusetts Agricultural College was among the first of these institutions established. When this act was passed the Massachusetts Institute of Technology was already organized, and the State of Massachusetts decided that the instruction in the mechanic arts should be at the Institute, and that the new institution should confine its work to agriculture. On this account the Massachusetts Agricultural College has the unique distinction of being the only separate agricultural college in the country.

In 1863 the State of Massachusetts accepted the provisions of the Morrill act and incorporated the Agricultural College. The location at Amherst was selected only after long and careful study by the original Board of Trustees. The college was formally opened to students on the 2d of October, 1867, with a faculty of four teachers and with four wooden buildings.

The Massachusetts Legislature has granted money for the erection of practically all of the buildings now on the grounds. In view of the fact that the annual income from the original endowment has been only a few thousand dollars, it has been necessary for the State to assume large responsibility for the current expenses of the institution.

ORGANIZATION. — The college is a State institution, serving in the Department of Education and as such is subject to the laws governing and the rules applying to all State departments and institutions. The work of the college is directed by a board of eighteen trustees. Four of these are ex-officio members, — the Governor of the State, the Commissioner of Education, the Commissioner of Agriculture and the President of the college. The other fourteen members are appointed by the Governor, two each year, for terms of seven years. The immediate control of the institution is vested in the President of the college. The administrative officers, having supervision of the various departments of activity, are directly responsible to the President.

In carrying out its purpose the college has organized three distinct yet correlated types of work, — namely, research, resident instruction and extension service.

RESEARCH. — In 1882 Massachusetts provided for the establishment of an agricultural experiment station. This station, though on the college grounds and supported by the State, was without organic connection with the college. Under an act of Congress, passed in 1887, an agricultural experiment station was established and supported as a department of the college. For a time, therefore, Massachusetts had two experiment stations at the college. In 1895 these were combined, and the station reorganized as a department of the college. It is now supported by funds from both the State and the Federal government. In 1906 the Federal government largely increased its support on condition that the money thus provided should be used only for research. The station now receives about two-thirds of its support from the State.

The station is under the direct supervision of the Board of Trustees; the chief officer is the director, who is responsible to the President. It is organized into a

number of departments, all co-operating toward the betterment of agriculture. In most cases the heads of these departments are heads of corresponding departments in the college.

RESIDENT INSTRUCTION. — The college offers an education at a nominal tuition fee of \$20 per term to any student who is a resident of Massachusetts and who meets the requirements for admission. Women are admitted on the same basis as are men. Students who are not residents of Massachusetts are required to pay a tuition fee of \$180 per year. The chief aim of the institution, through its resident instruction, is to prepare men and women for the agricultural vocations. The term "agricultural vocations" is here used in its broadest sense. Courses are offered which give efficient training in various agricultural pursuits, such as general farming, dairying, management of estates, poultry husbandry, fruit growing, market gardening, floriculture, landscape gardening and forestry. Students are also trained for investigation in many sciences underlying the great agricultural industry, for teaching in agricultural colleges and high schools, and for scientific work in chemistry, entomology, botany and microbiology. Comprehensive courses in home making are now available for women.

Though training for the agricultural vocations is thus the chief concern of the college, students should find the course one that trains them admirably for pursuits in which the sciences are an essential preparation. The course of study aims also to combine an adequate general education with specialized technical and practical training.

FOUR-YEAR COURSES. — Twenty-nine teaching departments offer instruction in agriculture, horticulture, sciences, the humanities, rural social science and home making. A system of major courses permits the student to elect major work in one of sixteen departments, and to specialize in it and allied subjects for a period of two years. The degree of bachelor of science is granted on the satisfactory completion of the four years' work of collegiate grade.

SHORT COURSES. — In order to extend the advantages of the institution to those men and women who cannot or do not care to pursue the four-year course, various short courses are offered. Chief among these are a two-year course in practical agriculture, a summer school of agriculture and country life, and a winter school of agriculture.

GRADUATE SCHOOL. — The graduate school is organized to provide the necessary training for scientific leadership in agriculture and allied sciences. The degrees of master of agriculture, master of landscape architecture, master of science, doctor of agriculture and doctor of philosophy may be earned upon the completion of satisfactory study, research and thesis.

THE EXTENSION SERVICE. — The Extension Service is the organized educational agency of the college which serves the people of the State other than resident students. Its function is to make available to Massachusetts citizens useful and practical information in agriculture and home economics which is developed by the experiment station or the United States Department of Agriculture, and which is taught by the college to resident students. It is the recognized agency of the United States Department of Agriculture for teaching those who cannot attend college, and is a cooperative effort by the Department of Agriculture, the Massachusetts Agricultural College, and the County Extension Services.

The Extension Service uses many methods of work, among which are the following:

- Demonstrations.
- Publications.
- Correspondence Courses.
- Lectures.
- Exhibits.
- Extension Schools.
- Leader-training Groups.
- Boys' and Girls' Clubs in Agriculture and Home Economics.
- Agricultural News Letters.

Literature descriptive of these various services will be mailed on request. Information may also be secured from the county agricultural agents at the following addresses:

Berkshire County Extension Service, Howard Block, Pittsfield, Mass.
Bristol County Agricultural School, Segreganset, Mass.
Cape Cod Extension Service, Barnstable, Mass.
Essex County Agricultural School, Hathorne, Mass.
Franklin County Extension Service, Sheldon Block, Greenfield, Mass.
Hampden County Improvement League, 719 Bridge St., West Springfield, Mass.
Hampshire County Extension Service, 59 Main St., Northampton, Mass.
Middlesex County Extension Service, 740 Main St., Waltham, Mass.
Norfolk County Agricultural School, Walpole, Mass.
Plymouth County Extension Service 106 Main St., Brockton, Mass.
Worcester County Extension Service, 19 Court St., Worcester, Mass.

LOCATION AND EQUIPMENT. — The Agricultural College is located in the town of Amherst. The grounds comprise approximately 700 acres, lying about a mile north of the village center. The college has also a demonstration forest of 755 acres, located 6 miles north of the campus. The equipment of the college, both in buildings and facilities for instruction, is excellent. Amherst is 97 miles from Boston, and may be reached by the Central Massachusetts division of the Boston & Maine Railroad, or by the Central Vermont Railroad. Electric car lines connect Amherst with Northampton, Holyoke and Springfield.

MILITARY DRILL. — By Federal law military drill is required of all regular students attending the Massachusetts Agricultural College.

THE TRUSTEES.

Organization of 1926.

MEMBERS OF THE BOARD.

	TERM EXPIRES
ARTHUR G. POLLARD of Lowell	1927
GEORGE H. ELLIS of West Newton	1927
JOHN CHANDLER of Sterling Junction	1928
ATHERTON CLARK of Newton	1928
NATHANIEL I. BOWDITCH of Framingham	1929
WILLIAM WHEELER of Concord	1929
SARAH LOUISE ARNOLD of Lincoln	1930
JAMES F. BACON of Boston	1930
FRANK GERRETT of Greenfield	1931
HAROLD L. FROST of Arlington	1931
CHARLES H. PRESTON of Danvers	1932
CARLTON D. RICHARDSON of West Brookfield	1932
DAVIS R. DEWEY of Cambridge	1933
JOHN F. GANNON of Pittsfield	1933

MEMBERS EX OFFICIO.

His Excellency Governor ALVAN T. FULLER, *President of the Board of Trustees.*
EDWARD M. LEWIS, *President of the College.*
PAYSON SMITH, *State Commissioner of Education.*
ARTHUR W. GILBERT, *State Commissioner of Agriculture.*

OFFICERS OF THE TRUSTEES.

His Excellency Governor ALVAN T. FULLER of Boston, *President.*
WILLIAM WHEELER of Concord, *Vice-President.*
ROBERT D. HAWLEY of Amherst, *Secretary.*
FRED C. KENNEY of Amherst, *Treasurer.*
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STANDING COMMITTEES OF THE TRUSTEES.¹

Committee on Finance.

ATHERTON CLARK, <i>Chairman.</i>	WILLIAM WHEELER.
GEORGE H. ELLIS.	ARTHUR G. POLLARD.
NATHANIEL I. BOWDITCH.	CARLTON D. RICHARDSON.

Committee on Course of Study and Faculty.

WILLIAM WHEELER, <i>Chairman.</i>	DAVIS R. DEWEY.
JAMES F. BACON.	JOHN F. GANNON.
PAYSON SMITH.	ARTHUR W. GILBERT.

Miss SARAH LOUISE ARNOLD.

¹ The President of the College is ex-officio member of each committee.

Committee on Farm.

NATHANIEL I. BOWDITCH, *Chairman*.
FRANK GERRETT.

GEORGE H. ELLIS.
ARTHUR W. GILBERT.
CARLTON D. RICHARDSON.

Committee on Horticulture.

HAROLD L. FROST, *Chairman*.
CHARLES H. PRESTON.

JOHN CHANDLER.
ATHERTON CLARK.

Committee on Experiment Department.

CHARLES H. PRESTON, *Chairman*.
ARTHUR W. GILBERT.
JOHN CHANDLER.

ARTHUR G. POLLARD.
HAROLD L. FROST.
CARLTON D. RICHARDSON.
Miss SARAH LOUISE ARNOLD.

Committee on Buildings and Arrangement of Grounds.

GEORGE H. ELLIS, *Chairman*.
FRANK GERRETT.
WILLIAM WHEELER.

JAMES F. BACON.
CHARLES H. PRESTON.
ATHERTON CLARK.

Committee on Extension Service.

JOHN CHANDLER, *Chairman*.
NATHANIEL I. BOWDITCH.
GEORGE H. ELLIS.
HAROLD L. FROST.

DAVIS R. DEWEY.
JOHN F. GANNON.
ARTHUR W. GILBERT.
Miss SARAH LOUISE ARNOLD.

Committee on Legislation.

GEORGE H. ELLIS, *Chairman*.
PAYSON SMITH.
NATHANIEL I. BOWDITCH.

WILLIAM WHEELER.
CARLTON D. RICHARDSON.
JAMES F. BACON.
ARTHUR W. GILBERT.

OFFICERS OF THE INSTITUTION.

- AS OF NOVEMBER 1, 1926.

Officers of Administration.

EDWARD M. LEWIS, A.M.	President's House.
President.	
WILLIAM L. MACHMER, A.M.	25 Amity Street.
Dean.	
FRED C. KENNEY	Mount Pleasant.
Treasurer.	
CHARLES E. MARSHALL, Ph.D.	10 South Prospect Street.
Director of the Graduate School.	
SIDNEY B. HASKELL, B.Sc.	2 Mount Pleasant.
Director of the Experiment Station.	
ROLAND H. VERBECK, B.Sc.	14 Orchard Street.
Director of Short Courses.	
WILLARD A. MUNSON, B.Sc.	101 Butterfield Terrace.
Director of the Extension Service.	
ROBERT D. HAWLEY, B.Sc.	South Amherst.
Secretary.	
BASIL B. WOOD, A.B.	Amity Street.
Librarian.	
WILLIAM I. GOODWIN, B.Sc.	North Amherst.
Field Agent.	

The Faculty of Instruction.

(The names of the faculty are arranged in groups according to rank and in sequence according to seniority of service in the institution.)

PROFESSORS.

EDWARD M. LEWIS, A.M.	President's House.
President and Professor of Languages and Literature.	
JOSEPH B. LINDSEY, Ph.D.	47 Lincoln Avenue.
Goessmann Professor of Agricultural Chemistry and Head of Department.	
JOHN E. OSTRANDER, A.M., C.E.	33 North Prospect Street.
Professor of Mathematics and Head of Department.	
HENRY T. FERNALD, Ph.D.	44 Amity Street.
Professor of Entomology and Head of Department.	
FRANK A. WAUGH, M.Sc.	Campus.
Professor of Landscape Gardening, Head of Department, Head of Division of Horticulture.	
A. VINCENT OSMUN, M.Sc.	16 Northampton Road.
Professor of Botany and Head of Department.	
CLARENCE E. GORDON, Ph.D.	38 Lincoln Avenue.
Professor of Zoölogy and Geology, Head of Department, Acting Chairman of Division of Science.	
FRED C. SEARS, M.Sc.	Mount Pleasant.
Professor of Pomology and Head of Department.	

10		P.D. 31.
JAMES A. FOORD, M.Sc.Agr.		54 Lincoln Avenue.
	Professor of Farm Management and Head of Department.	
ALEXANDER A. MACKIMMIE, A.M.		North Amherst.
	Professor of Economics and Sociology, Head of Department and Chairman of the Division of Humanities.	
EDGAR L. ASHLEY, A.M.		Amherst House.
	Professor of French.	
ALEXANDER E. CANCE, Ph.D.		9 Fearing Street.
	Professor of Agricultural Economics and Head of Department.	
JOSEPH S. CHAMBERLAIN, Ph.D.		Mount Pleasant.
	Professor of Organic and Agricultural Chemistry.	
JOHN C. GRAHAM, B.Sc.Agr.		68 Lincoln Avenue.
	Professor of Poultry Husbandry and Head of Department.	
G. CHESTER CRAMPTON, Ph.D.		Fernald Hall.
	Professor of Insect Morphology.	
CHARLES A. PETERS, Ph.D.		Sunset Place.
	Professor of Inorganic and Soil Chemistry.	
GEORGE E. GAGE, Ph.D.		The Davenport.
	Professor of Animal Pathology and Head of Department of Veterinary Science and Animal Pathology.	
WILLIAM L. MACHMER, A.M.		25 Amity Street.
	Dean of the College and Professor of Mathematics.	
ARTHUR N. JULIAN, A.B.		4 Farview Way.
	Professor of German.	
CURRY S. HICKS, B.Pd.		The Davenport.
	Professor of Physical Education and Hygiene and Head of Department.	
CHARLES E. MARSHALL, Ph.D.		10 South Prospect Street.
	Professor of Microbiology and Head of Department.	
WALTER W. CHENOWETH, M.Sc.		North Amherst.
	Professor of Horticultural Manufactures and Head of Department.	
HAROLD M. GORE, B.Sc.		Plainville Road.
	Professor of Physical Education.	
CHRISTIAN I. GUNNESS, B.Sc.		105 Butterfield Terrace.
	Professor of Agricultural Engineering and Head of Department.	
CHARLES H. THOMPSON, M.Sc.		Mount Pleasant.
	Professor of Horticulture.	
CHARLES H. PATTERSON, A.M.		26 Lincoln Avenue.
	Professor of English and Head of Department of Languages and Literature.	
ARTHUR B. BEAUMONT, Ph.D.		51 Amity Street.
	Professor of Agronomy and Head of Department.	
RALPH A. VAN METER, B.Sc.		7 East Pleasant Street.
	Professor of Pomology.	
EDNA L. SKINNER, M.Ed.		Fearing Street.
	Professor of Home Economics, Head of Department, Adviser of Women.	
WINTHROP S. WELLES, B.Sc.		23 Lincoln Avenue.
	Professor of Agricultural Education and Head of Department.	
CLARK L. THAYER, B.Sc.		North Amherst.
	Professor of Floriculture and Head of Department.	
SIDNEY B. HASKELL, B.Sc.		2 Mount Pleasant.
	Acting Head of the Division of Agriculture.	
LAURENCE R. GROSE, A.B., M.F.		32 Amity Street.
	Professor of Forestry and Head of Department.	
WILLIAM C. SANCTUARY, B.Sc.		11 Cottage Street.
	Professor of Poultry Husbandry.	
HARRY N. GLICK, Ph.D.		27 Fearing Street.
	Professor of Agricultural Education.	
WALLACE F. POWERS, Ph.D.		7 Allen Street.
	Professor of Physics and Head of Department.	
N. BUTLER BRISCOE, Major, Cavalry, U. S. A.		2 Allen Street.
	Professor of Military Science and Tactics and Head of Department.	

Part II. 11
 JULIUS H. FRANDSEN, M.S.A. 35 Lincoln Avenue.
 Professor of Animal and Dairy Husbandry and Head of Department.

Professor of Rural Sociology and Head of Department.

ASSISTANT PROFESSORS.

FREDERICK A. McLAUGHLIN, B.Sc.	4 Nutting Avenue.
Assistant Professor of Botany.	
ARTHUR K. HARRISON	26 Fearing Street.
Assistant Professor of Landscape Gardening.	
WALTER E. PRINCE, A.M.	27 Amity Street.
Assistant Professor of English.	
LAWRENCE S. DICKINSON, B.Sc.	2 Farview Way.
Assistant Professor of Horticulture.	
PAUL SEREX, Ph.D.	Lincoln Avenue.
Assistant Professor of Chemistry.	
ORTON L. CLARK, B.Sc.	12 College Street.
Assistant Professor of Botany.	
FRANK PRENTICE RAND, A.M.	3 Mount Pleasant.
Assistant Professor of English.	
JOHN B. LENTZ, A.B., V.M.D.	3 Dana Street.
Assistant Professor of Veterinary Science and College Veterinarian.	
VICTOR A. RICE, M.Agr.	35 Woodside Avenue.
Assistant Professor of Animal Husbandry.	
LUTHER BANTA, B.Sc.	Sunset Avenue.
Assistant Professor of Poultry Husbandry.	
DONALD W. SAWTELLE, M.Sc.	5 Allen Street.
Assistant Professor of Agricultural Economics.	
FRANK C. MOORE, A.B.	10 Allen Street.
Assistant Professor of Mathematics.	
ENOS J. MONTAGUE, B.Sc.	Campus.
Assistant Professor of Farm Practice.	
BROOKS D. DRAIN, S.M.	17 Fearing Street.
Assistant Professor of Pomology.	
RAY E. TORREY, Ph.D.	Inwood.
Assistant Professor of Botany.	
RICHARD W. SMITH, Jr., M.S.	50 Pleasant Street.
Assistant Professor of Dairying.	
GUY V. GLATFELTER, M.Sc.	29 Northampton Road.
Assistant Professor of Animal Husbandry.	
GEORGE W. ALDERMAN, B.A.	Tillson Court.
Assistant Professor of Physics.	
MARSHALL O. LAMPHEAR, M.Sc.	Mount Pleasant.
Assistant Professor in charge of Freshman Agriculture.	
WILLIAM H. DAVIS, Ph.D.	12 Nutting Avenue.
Assistant Professor of Botany.	
CHARLES P. ALEXANDER, Ph.D.	120 Pleasant Street.
Assistant Professor of Entomology.	
GRANT B. SNYDER, B.Sc.Agr.	50 Pleasant Street.
Assistant Professor of Vegetable Gardening.	
DWIGHT HUGHES, Jr., Captain, Cavalry, U. S. A.	10 South Prospect Street.
Assistant Professor of Military Science and Tactics.	
RICHARD T. MULLER, M.Sc.	45 East Pleasant Street.
Assistant Professor of Floriculture.	
HELEN KNOWLTON, A.M.	25 Fearing Street.
Assistant Professor of Home Economics.	
MINER J. MARKUSON, B.Sc.	1 Kendrick Place.
Assistant Professor of Agricultural Engineering.	
LEON R. QUINLAN, M.L.A.	14 Orchard Street.
Assistant Professor of Landscape Gardening.	

12		P.D. 31.
LEON A. BRADLEY, Ph.D.		North Amherst.
Assistant Professor of Microbiology.		
FREDERICK M. CUTLER, Ph.D.	103 Butterfield Terrace.	
Assistant Professor of Rural Sociology.		
MARION L. TUCKER, B.Sc.	7 Nutting Avenue.	
Assistant Professor of Home Economics.		
MILES H. CUBBON, Ph.D.	Inwood.	
Assistant Professor of Agronomy.		
ROLLIN H. BARRETT, M.S.	Pelham Road.	
Assistant Professor of Farm Management.		
EDWIN M. SUMNER, Captain, Cavalry, U. S. A.	Sunset Avenue.	
Assistant Professor of Military Science and Tactics.		
MARGARET HAMLIN, B.A.	12 North East Street.	
Agricultural Counsellor for Women.		
PAUL W. VIETS	Sunset Avenue.	
Supervisor of Placement Training.		

INSTRUCTORS.

GEORGE F. PUSHEE	North Amherst.
Instructor in Agricultural Engineering.	
Mrs. CURRY S. HICKS	The Davenport.
Instructor in Physical Education.	
JOHN B. NEWLON	North Amherst.
Instructor in Agricultural Engineering.	
CHARLES H. THAYER	South East Street.
Instructor in Agronomy.	
WILLIAM F. ROBERTSON, B.Sc.	33 East Pleasant Street.
Instructor in Horticultural Manufactures.	
ARTHUR P. FRENCH, M.Sc.	South Amherst.
Instructor in Pomology.	
MARY E. M. GARVEY, B.Sc.	29 South Prospect Street.
Instructor in Microbiology.	
LLEWELLYN L. DERBY	Amherst House.
Instructor in Physical Education.	
HAROLD W. SMART, A.B., LL.B.	34 Main Street.
Instructor in Farm Law, Business English and Public Speaking.	
MARION G. PULLEY, B.Sc.	70 Lincoln Avenue.
Instructor in Poultry Husbandry.	
LORIN E. BALL, B.Sc.	3 Allen Street.
Instructor in Physical Education.	
RAYMOND HALLIDAY, B.A.	The Davenport.
Instructor in French.	
FREDERIC R. BUTLER, Ph.D.	42 Lincoln Avenue.
Instructor in Chemistry.	
MERRILL J. MACK, M.Sc.	32 North Prospect Street.
Instructor in Dairying.	
LUTHER B. ARRINGTON, B.Sc.	9 Fearing Street.
Instructor in Horticulture.	
MARY J. FOLEY, M.Sc.	3 South Prospect Street.
Instructor in Agricultural Economics.	
OLIVER C. ROBERTS, B.Sc.	10 Nutting Avenue.
Instructor in Pomology.	
JAMES E. FULLER, A.M.	Amherst House.
Instructor in Microbiology.	
CHAUNCEY M. GILBERT, B.Sc.	33 Cottage Street.
Instructor in Zoölogy.	
OLIVER W. KELLY, B.Sc.	22 Cottage Street.
Instructor in Agronomy.	
ALFRED NICHOLSON, M.A.	35 East Pleasant Street.
Instructor in English.	

Part II.

13

HAROLD D. BOUTELLE, B.Sc., Ch.E.	19 Woodside Avenue.
Instructor in Mathematics.	
GERALD J. STOUT, M.S.	Inwood.
Instructor in Vegetable Gardening.	
L. LELAND DURKEE, B.Sc.	44 Sunset Avenue.
Instructor in German.	
CLAYTON L. FARRAR, B.Sc.	120 Pleasant Street.
Instructor in Entomology and Beekeeping.	
PHILIP H. COUHIG, B.Sc.	3 Allen Street.
Instructor in Physical Education.	
Instructor in Animal Husbandry.	

The Experiment Station Staff.

ADMINISTRATIVE OFFICERS.

EDWARD M. LEWIS, A.M.	President's House.
President.	
SIDNEY B. HASKELL, B.Sc.	2 Mount Pleasant.
Director.	
JOSEPH B. LINDSEY, Ph.D.	47 Lincoln Avenue.
Vice Director.	
EDWIN F. GASKILL, B.Sc.	North Pleasant Street.
Assistant to the Director.	

PROFESSORS.

EDWARD B. HOLLAND, Ph.D.	28 North Prospect Street.
Research Professor of Chemistry.	
JOHN E. OSTRANDER, A.M., C.E.	33 North Prospect Street.
Meteorologist.	
HENRY T. FERNALD, Ph.D.	44 Amity Street.
Professor of Entomology and Head of Department.	
A. VINCENT OSMUN, M.Sc.	16 Northampton Road.
Professor of Botany and Head of Department.	
JACOB K. SHAW, Ph.D.	5 Farview Way.
Research Professor of Pomology.	
HENRY J. FRANKLIN, Ph.D.	East Wareham.
Research Professor in charge of Cranberry Station.	
FRED W. MORSE, M.Sc.	40 Pleasant Street.
Research Professor of Chemistry.	
FRANK A. HAYS, Ph.D.	Oneacre.
Research Professor of Poultry Husbandry.	
WILLIAM L. DORAN, M.Sc.	16 Nutting Avenue.
Research Professor of Botany.	
JOHN P. JONES, Ph.D.	8 Allen Street.
Research Professor of Agronomy.	

ASSISTANT PROFESSORS.

ARTHUR I. BOURNE, B.A.	12 East Pleasant Street.
Assistant Research Professor of Entomology.	
CARLETON P. JONES, M.Sc.	8 Nutting Avenue.
Assistant Research Professor of Chemistry.	
JOHN G. ARCHIBALD, M.Sc.	North Amherst.
Assistant Research Professor of Chemistry.	
NORMAN J. PYLE, V.M.D.	16 North Prospect Street.
Assistant Research Professor of Avian Pathology.	
JOHN S. BAILEY, M.Sc. ¹	
Assistant Research Professor of Pomology.	

¹ Absent on leave.

14		P.D. 31.
VICTOR A. TIEDJENS, M.Sc.	Assistant Research Professor of Vegetable Gardening.	Waltham.
EMIL F. GUBA, Ph.D.	Assistant Research Professor of Botany.	Waltham.
WARREN D. WHITCOMB, B.Sc.	Assistant Research Professor of Entomology.	Waltham.
LEON A. BRADLEY, Ph.D.	Assistant Research Professor of Microbiology.	North Amherst.
LINUS H. JONES, Ph.D.	Assistant Research Professor of Botany.	16 Nutting Avenue.

INVESTIGATORS.

HARRY L. ALLEN	Laboratory Assistant in Chemistry.	89 Main Street.
JAMES R. ALCOCK	Laboratory Assistant in Animal Nutrition.	North Amherst.
F. ETHEL FELTON, B.A.	Editorial Assistant.	The Davenport.
ALYN S. BALL	Laboratory Assistant in Botany.	94 Main Street.
RUBY SANBORN, A.B.	Investigator in Poultry Husbandry.	25 Fearing Street.
GLADYS I. MINER	Curator, Department of Botany.	87 Pleasant Street.
WALTER L. CUTLER	Laboratory Assistant in Pomology.	North Pleasant Street.
RAY G. SMILEY, B.Sc. ¹	Investigator in Pomology.	85 Pleasant Street.
ROBERT S. HORNE, B.Sc. ¹	Investigator in Agronomy.	Sunderland.
_____	Investigator in Chemistry.	
_____	Investigator in Cranberry Studies.	

Research Staff employed on Purnell Funds.

ROBERT J. MCFALL, Ph.D.	Research Professor of Agricultural Economics.	20 Spring Street.
CARL R. FELLERS, Ph.D.	Research Professor of Horticultural Manufactures.	8 South Prospect Street.
LORIAN P. JEFFERSON, M.A.	Assistant Research Professor of Agricultural Economics.	The Davenport.
HUBERT W. YOUNT, M.Sc.	Assistant Research Professor of Agricultural Economics.	39 Main Street.
ARTHUR W. PHILLIPS, A.M.	Assistant Research Professor of Dairying.	12 Nutting Avenue.
RUTH E. SHERBURNE, B.Sc.	Laboratory Assistant in Agricultural Economics.	87 Pleasant Street.

Control Service Staff.

HENRI D. HASKINS, B.Sc.	Official Chemist, Fertilizer Control.	Easthampton.
PHILIP H. SMITH, M.Sc.	Official Chemist, Feed Control.	102 Main Street.
LEWELL S. WALKER, B.Sc.	Assistant Official Chemist, Fertilizer Control.	19 Phillips Street.

¹ Temporary.

Part II.		15
HENRY VAN ROEKEL, M.S., D.V.M.	Specialist, Poultry Disease Elimination.	54 Lincoln Avenue.
JAMES T. HOWARD	Inspector.	7 Phillips Street.
FRANK J. KOKOSKI, B.Sc.	Analyst.	Northampton Road.
HAROLD F. ROWLEY, B.Sc.	Technical Assistant.	15 Hallock Street.
Mrs. LEILA PRESCOTT	Analyst.	Pelham Road.
MARVIN W. GOODWIN, B.Sc.	Analyst.	North Pleasant Street.
CLIFTON B. WAITE	Field Agent, Disease Control.	Orange.

Extension Service Staff.

ADMINISTRATIVE OFFICERS.

EDWARD M. LEWIS, A.M.	President.	President's House.
WILLARD A. MUNSON, B.Sc.	Director.	101 Butterfield Terrace.
RALPH W. REDMAN, B.Sc.	Assistant Director.	6 Nutting Avenue.
GEORGE L. FARLEY, M.Sc.	State Leader of County Club Agents.	61 Amity Street.
SUMNER R. PARKER, B.Sc.	State Leader of County Agricultural Agents.	South Amherst.
WILLIAM F. HOWE	Assistant State Leader of County Club Agents.	North Amherst.
EARLE H. NODINE, B.Sc.	Assistant State Leader in charge of Poultry Clubs.	21 Woodside Avenue.
MARION E. FORBES	Assistant State Leader of County Club Agents.	12 East Pleasant Street.
EARLE S. CARPENTER, M.Sc.	Supervisor, Exhibits and Extension Courses.	33 Fearing Street.
GRUNOW O. OLESON, M.Sc.	Extension Editor.	50 Pleasant Street.

State Leader of County Home Demonstration Agents.

PROFESSORS.

WILLIAM P. B. LOCKWOOD, M.Sc.	Extension Professor of Dairying.	51 Cornhill, Boston.
WILLIAM C. MONAHAN, B.Sc.	Extension Professor of Poultry Husbandry.	8 Kellogg Avenue.
WILLIAM R. COLE	Extension Professor of Horticultural Manufactures.	33 Fearing Street.
CLIFFORD J. FAWCETT, B.Sc.	Extension Professor of Animal Husbandry.	70 Lincoln Avenue.
FAYETTE H. BRANCH, B.Sc.	Extension Professor of Farm Management.	31 East Pleasant Street.
RAY M. KOON, M.Sc.	Extension Professor of Vegetable Gardening; in charge of Market Garden Field Station, Waltham.	Waltham.
JOHN P. HELYAR, M.Sc.	Extension Professor of Agronomy.	21 Pleasant Street.

Extension Professor of Marketing.

ASSISTANT PROFESSORS.

WILBUR H. THIES, M.Sc.	16 North Prospect Street.
Assistant Extension Professor of Pomology.	
MAY E. FOLEY, M.A.	16 Nutting Avenue.
Assistant Extension Professor of Nutrition.	
Assistant Extension Professor of Home Economics.	

The Library Staff.

BASIL B. WOOD, A.B.	Amity Street.
Librarian.	
LENA V. CHAPMAN	77 South Pleasant Street.
Assistant in charge of circulation.	
Mrs. NAN L. KELLY	22 Cottage Street.
Library Assistant.	
KATHERINE POWELL	9 Amity Street.
Department Librarian.	
BESSIE M. WEYMOUTH	116 Pleasant Street.
Cataloguer.	

Other Officers.

BALDASSAROS E. A. BOVENZI	61 Amity Street.
Engineer.	
JOHN K. BROADFOOT	130 Pleasant Street.
Assistant to the Treasurer.	
AVIS P. CHRISTOPHER	Infirmary.
Resident Nurse.	
LAWRENCE S. DICKINSON, B.Sc.	2 Farview Way.
Superintendent of Grounds.	
GRACE E. GALLOND	28 Pleasant Street.
Assistant to the Dean.	
S. CHURCH HUBBARD	North Amherst.
Foreman, Department of Floriculture.	
CLARENCE A. JEWETT	112 Pleasant Street.
Superintendent of Buildings.	
JOHN J. LEE	38 Cottage Street.
Assistant to the Military Detail.	
MARION N. MACDONALD, A.M.	Draper Hall.
Manager of the Dining Hall.	
Mrs. MARY MACRAE	Infirmary.
Matron.	
Mrs. MARIE B. MARSH	Abigail Adams House.
Matron.	
WILLIAM E. MARTIN	5 Phillips Street.
Laboratory Assistant, Department of Horticultural Manufactures.	
ENOS J. MONTAGUE, B.Sc.	Campus.
Farm Superintendent.	
ADELBERT SHEFFIELD	North Amherst.
Superintendent of Dairy Manufactures.	
EDWIN O. TURNER	Sunderland.
Curator, Goessmann Laboratory.	

Graduate Assistants.

MALCOLM DULL, A.B.	35 North Prospect Street.
Department of Chemistry.	
RICHARD W. FESSENDEN, B.Sc.	90 Pleasant Street.
Department of Chemistry.	
RALPH L. FRANCE, B.Sc.	9 Fearing Street.
Department of Microbiology.	
CLIFFORD O. GATES, B.S.A.	9 Fearing Street.
Department of Landscape Gardening.	
W. BROOKS HAMILTON, B.S.A.	North Amherst.
Department of Microbiology.	
HENRY C. HAWLEY, A.B., M.B.A.	1 Hitchcock Street.
Department of Agricultural Economics.	
LOYAL R. JOHNSON, B.Sc.	17 Amity Street.
Department of Landscape Gardening.	
GEORGE J. LARSINOS, B.Sc.	North College.
Department of Agronomy.	
MAJEL M. MACMASTERS, B.Sc.	28 Pleasant Street.
Department of Chemistry.	
ROBERT F. SAZAMA, B.Sc.	85 Pleasant Street.
Department of Entomology.	
JAMES D. SPRINGS, B.A.	35 North Prospect Street.
Department of Chemistry.	
T. ROBERT SWANBACK, Agronomy	East Experiment Station.
Department of Agronomy.	

STANDING COMMITTEES OF THE FACULTY.

1926-1927.

Commencement.

Asst. Professor CLARK.
 Treasurer KENNEY.
 Secretary HAWLEY.
 Professor CHAMBERLAIN.
 Professor GROSE.
 Professor POWERS.
 Mr. S. R. PARKER.

Course of Study.

President LEWIS.
 Dean MACHMER.
 Professor WAUGH.
 Professor GORDON.
 Professor OSTRANDER.
 Professor MARSHALL.
 Director HASKELL.
 Professor OSMUN.
 Professor WELLES.
 Professor FOORD.
 Professor BEAUMONT.
 Professor PATTERSON.
 Professor CANCE.
 Professor SKINNER.

Discipline.

Professor MACKIMMIE.
 Dean MACHMER.
 Professor CHENOWETH.
 Professor GORE.
 Professor GUNNESS.
 Asst. Professor HARRISON.

Employment.

Professor THAYER.
 Treasurer KENNEY.
 Secretary HAWLEY.
 Professor FRANDSEN.
 Asst. Professor MONTAGUE.
 Asst. Professor DICKINSON.

Academic Activities Board.

Dean MACHMER.
 Asst. Professor LANPHEAR.

Entrance Examinations and Admission.

Dean MACHMER.
 Professor POWERS.
 Professor OSMUN.
 Professor GLICK.
 Professor JULIAN.
 Professor GRAHAM.
 Asst. Professor LENTZ.

Scholarship.

Dean MACHMER.
 Professor PETERS.
 Professor MACKIMMIE.
 Professor HICKS.
 Asst. Professor RAND.
 Asst. Professor TORREY.
 Asst. Professor RICE.
 Asst. Professor ALEXANDER.
 Asst. Professor LANPHEAR.

Student Life.

Professor THAYER.
 Secretary HAWLEY.
 Professor SEARS.
 Professor HICKS.
 Professor SANCTUARY.
 Asst. Professor KNOWLTON.

Athletic Board.

Dean MACHMER.
 Professor OSMUN.
 Asst. Professor SMITH.

Health and Sanitation.

Professor MARSHALL.
 Treasurer KENNEY.
 Professor GAGE.
 Professor HICKS.
 Professor SKINNER.

Library.

Professor MARSHALL.
 Professor PATTERSON.
 Professor CANCE.
 Mr. WOOD.

ADMISSION.

A. APPLICATION FOR ADMISSION.

Correspondence concerning admission should be addressed to the Dean's office.

Every applicant for admission to the college must be at least sixteen years old, and must present to the Dean proper testimonials of character, which, whenever possible, should come from the principal of the school at which the applicant has prepared for college. Candidates who desire to present themselves for examination in any subjects must make application to the college for such privilege at least one month before the date of the examination. Blanks for such application may be obtained by addressing the Dean of the college. All entrance credentials must be in the hands of the Dean before the applicant can matriculate.

B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon certificate or upon examination. No *diploma* from a secondary school will be accepted.

CERTIFICATES. — The Massachusetts Agricultural College is affiliated with the New England College Entrance Certificate Board. Therefore certificates of admission will be accepted from schools approved by the Board. Certificates of admission will also be accepted from any Massachusetts school listed as class "A" by the State Department of Education, but not included in the approved lists of the New England College Entrance Certificate Board. Principals of schools in New England who desire the certificate privilege should address the secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn. Certificates from schools outside of New England may be received if those schools are on the approved list of the leading colleges of the section in which the school in question is located.

The credentials of the Board of Regents of the State of New York are accepted as satisfying the entrance requirements of this college when offered subject for subject.

Certificates in order to be accepted must present in the prescribed and restrictive elective groups at least three of the necessary fourteen and one-half credits. It is to be understood, however, that responsibility for certification in either elementary French, elementary German, English 1 or English 2, Latin A, Greek A or algebra must be assumed by one school, if the candidate has received his preparation in any one subject named above in more than one school. Subjects lacking on certificate must be made up at the time of the examinations for admission. Conditions to the amount of two units will be allowed.

SPECIAL CERTIFICATE ARRANGEMENT FOR STUDENTS FROM AGRICULTURAL SCHOOLS. — Superior graduates of Vocational Schools of Agriculture in Massachusetts and Vocational Agricultural Departments in Massachusetts High Schools may be accepted for the Degree of Vocational Agriculture provided: —

(a) they are unqualifiedly recommended by the Vocational Division of the Department of Education as bona fide Vocational Graduates with superior rank; and

(b) that they can present at least $14\frac{1}{2}$ units of certified entrance credits, approved as to quality and quantity by the State Department of Vocational Education.

Blank forms for certification — sent to principals or school superintendents only — may be obtained on application to the Dean of the college.

EXAMINATIONS. — The examination in each subject may be oral or written, or both. The standard required for passing an examination for admission is 60 per cent.

Entrance examination for admission to the Massachusetts Agricultural College will be held at the following centers: —

In June Amherst, Stockbridge Hall, room 114.
 Cambridge, Massachusetts Institute of
 Technology.
 Worcester, Worcester Polytechnic Institute.

In September Amherst, Stockbridge Hall, room 114.

Please note that September examinations are held in Amherst only.

Schedule for Entrance Examinations June 16-18, 1927.

First Day.

8.30 A.M. Algebra.
 10.30 A.M. Chemistry.
 2.00 P.M. History (ancient, medieval and modern, English, general, United States and Civics).

Second Day.

8.30 A.M. English 1 and 2.
 11.30 A.M. Botany.
 2.00 P.M. Plane Geometry.
 3.30 P.M. Physics.

Third Day.

8.30 A.M. French, German, Spanish, required and elective.
 1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

Schedule for Entrance Examinations September 7-10, 1927.

First Day.

2.15-5.00 P.M. Greek, elementary and intermediate.

Second Day.

8.30 A.M. Algebra.
 10.30 A.M. Chemistry.
 2.00 P.M. History (ancient, medieval and modern, English, general, United States and Civics).

Third Day.

8.30 A.M. English 1 and 2.
 11.30 A.M. Botany.
 2.00 P.M. Plane Geometry.
 3.30 P.M. Physics.

Fourth Day.

8.30 A.M. French, German, Spanish, required and elective.
 1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

C. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-year high school course, or its equivalent, and are stated in terms of units. The term unit means the equivalent of at least four recitations a week for a school year.

Fourteen and one-half units must be offered for admission in accordance with the entrance requirements as stated below. Entrance credits gained either by certificate or by examination will hold good for one year.

Entrance Requirements.

1. *Prescribed.* — The following units are prescribed: —

English 1	2
English 2	1
A foreign language	2
Algebra	1½
Plane geometry	1
	7½

2. *Restricted Electives.* — Three units to be selected from —

Science	1, 2 or 3
History (American history and civics included)	1, 2 or 3
A second foreign language	2 or 3
Additional work, in first foreign language	1 or 2

3. *Free Margin.* — Free margin of four units to consist of any substantial work (including agriculture, general science and a fourth year of English) for which credit of not less than one-half unit earned in one year is given toward a secondary school diploma. Units presented in the free margin group may be offered only by certificate.

4. One unit of history must be offered in either the restricted electives or the free margin.

5. If elementary algebra and plane geometry are counted as three units, the total requirement will be fifteen units.

6. Both the credits under the prescribed group and the restricted elective group must be presented either by certificate from an approved school or by examination, or by a combination of both.

The following is a list of subjects in which the entrance credits must be offered in the prescribed and restricted elective groups: —

Mathematics and Science.

Botany ¹	½ or 1
Chemistry ¹	1
Algebra	1½
Plane geometry	1
Solid geometry	½
Trigonometry	½
Physics ¹	1
Geology	½
Physical geography	½
Physiology	½
Zoölogy ¹	½

¹ NOTE-BOOKS. — The keeping of a note-book is required as part of the preparation in those subjects indicated. Candidates presenting themselves for examination in such subjects must present at the same time a statement signed by the Principal to the effect that a satisfactory note-book has been kept by the candidate.

History.

Ancient	1
Medieval and modern	1
English	1
General	1
United States and civics	1

English.

English 1	2
English 2	1

Foreign Language.

Elementary French	2
Elementary German	2
Elementary Spanish	2
Elementary Latin	2
Elementary Greek ¹	2
Intermediate French	1
Intermediate German	1
Intermediate Spanish	1
Intermediate Latin	1
Intermediate Greek ¹	1
Advanced French	1
Advanced German	1
Advanced Spanish	1
Advanced Latin	1

No applicant deficient in both algebra and plane geometry will be admitted.

D. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION.

AGRICULTURE. — Entrance credit in agriculture is granted on the following basis: —

I. The Massachusetts Agricultural College accepts a maximum of four credits in agriculture from any secondary or county agricultural high school in Massachusetts offering work in that subject, provided evidence of such work having been done is submitted on a principal's statement, as is indicated in the "free margin" group.

II. In high schools organizing agricultural club work under the supervision and rules of the junior extension service of the college, one credit is granted for each full year of work performed under the following plan: —

Work of the Winter Term. — (a) The study of textbooks such as are suitable for secondary school instruction in agriculture.

(b) Course of Study: A general outline of suggested topics for study.

(c) Visits by a representative of the Massachusetts Agricultural College for observation, counsel and advice in regard to kind and amount of work being done in agriculture.

(d) Formation of an agricultural club with officers from among its own members, meeting once a month under local supervision of some one authorized to act for the school authorities.

Work of the Spring Term. — Same in general form as winter term.

Work of the Summer Term. — An approved project conforming to the rules of some one or more of the agricultural clubs of the junior extension service of the Massachusetts Agricultural College.

Work of the Fall Term. — (a) An exhibit of work.

(b) Reports and story of achievement submitted to the junior extension service of the college.

BOTANY. — For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent.

¹ Examination in September only.

lent, will be accepted. This work should occupy one school year and include laboratory and supplementary textbook study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Stevens' "Introduction to Botany" and Bergen & Davis' "Principles of Botany." A note-book, containing neat, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit, and this note-book must be presented by all applicants for admission upon examination in this subject. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

CHEMISTRY. — The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from any standard textbook, with laboratory work on the properties of the common elements and their simpler compounds. No particular work is prescribed. The keeping of a note-book is required.

Students who do not take chemistry in the preparatory school begin the subject in college, and are required to do extra work during the first two terms, as outlined under chemistry, courses 1 and 2, pages 61 and 62.

MATHEMATICS. — (a) *Required.* — Algebra: The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending upon quadratic equations; the binomial theorem for positive integral exponents, the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Plane Geometry: The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective.* — Solid Geometry: The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

Plane Trigonometry: A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

PHYSICS. — To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work must consist of both classroom work and laboratory practice. The work covered in the class-room should be equal to that outlined in Hall & Bergen's "Textbook of Physics" or Millikan & Gale; the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory note-book. This note-book, certified by the instructor in the subject, must be submitted by each candidate presenting himself for examination in physics; credit for passing the subject will be given on laboratory notes and on the examination submitted. Candidates entering on certificate will not be required to present note-books, but the principal's certification must cover laboratory as well as class-room work.

PHYSIOLOGY. — Hough & Sedgwick's "The Human Mechanism;" Martin's "The Human Body;" Briefer Course."

ZOOLOGY, PHYSICAL GEOGRAPHY, GEOLOGY. — The following suggestions are made concerning preparation for admission in the subjects named above: —

For physiography, Davis' "Elementary Physical Geography;" Gilbert & Brigham's "Introduction to Physical Geography." For zoölogy, textbooks entitled "Animals" or "Animal Studies," by Jordan, Kellogg and Heath; Linville & Kelley's "A Textbook in General Zoölogy." For geology, A. P. Brigham's "A Textbook of Geology" or Tarr's "Elementary Geology."

Applicants for examination in zoölogy are *required* to present certified laboratory note-books; applicants for examination in the other subjects are *advised* to present note-books, if laboratory work has been done. Good note-books may be given credit for entrance. Examination in these subjects will be general, in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

HISTORY. — The required unit must be offered in either ancient history, medieval and modern history, English history, general history, or United States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that no unit be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good textbooks, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on outline maps.

To indicate in a general way the character of the textbook work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Myers or Fisher, in general history; Fiske, together with MacLaughlin or Montgomery, in United States history and civics.

ENGLISH. — The study of English in school has two objectives of equal importance: first, the ability to use the English language, in both speech and writing, clearly, correctly and effectively; and, second, the ability to read English literature with understanding and appreciation.

(1) *Grammar and Composition* (Two Units). — The first objective makes necessary a rigorous and reiterated instruction in grammar and composition, with special emphasis upon: spelling, sentence structure, punctuation and paragraph development. College freshmen are found deficient particularly in these fundamental phases of rhetoric.

(2) *Literature* (One Unit). — The second objective is sought by means of two lists of books, designated as *Books for Reading* and *Books for Study*, from which may be selected material for a progressive, four-year course in literature. The student should be trained to read aloud, to memorize significant passages, to associate the books with their historic background and to have well in hand both content and structure. He should be prepared for general examination on the former list and detailed examination on the latter. However accurate in subject matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

LISTS OF BOOKS FOR 1926-1928.

1. *Books for Reading.*

From each group two selections are to be made, except that for any book in Group V a book from any other may be substituted.

Group I.

Cooper: "The Last of the Mohicans."

Dickens: "A Tale of Two Cities."

George Eliot: "Silas Marner."

Scott: "Ivanhoe" or "Quentin Durward."

Stevenson: "Treasure Island" or "Kidnapped."

Hawthorne: "The House of the Seven Gables."

Group II.

Shakespeare: "The Merchant of Venice," "Julius Caesar," "King Henry V,"
"As You Like It," "The Tempest."

Group III.

Scott: "The Lady of the Lake."

Coleridge: "The Ancient Mariner;" and Arnold: "Sohrab and Rustum."

A collection of representative verse, narrative and lyric.

Tennyson: "Idylls of the King" (any four).

"The Æneid" or "The Odyssey" in a translation of recognized excellence, with the omission, if desired, of Books I-V, XV, and XVI of "The Odyssey."

Longfellow: "Tales of a Wayside Inn."

Group IV.

The "Old Testament" (the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther).

Irving: "The Sketch Book" (about 175 pages).

Addison and Steele: "The Sir Roger de Coverley Papers."

Macaulay: "Lord Clive" or "History of England," Chapter III.

Franklin: "Autobiography."

Emerson: "Self-Reliance and Manners."

Group V.

A modern novel.

A collection of short stories (about 150 pages).

A collection of contemporary verse (about 150 pages).

A collection of scientific writings (about 150 pages).

A collection of prose writings on matters of current interest (about 150 pages).

A selection of modern plays (about 150 pages).

All selections from this group should be works of recognized excellence.

2. Books for Study.

One selection is to be made from each of Groups I and II, and two from Group III.

Group I.

Shakespeare: "Macbeth," "Hamlet."

Group II.

Milton: "L'Allegro," "Il Penseroso," and either "Comus" or "Lycidas."

Browning: "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Hervé Riel," "Pheidippides," "My Last Duchess," "Up at a Villa — Down in the City," "The Italian in England," "The Patriot," "The Pied Piper," "De Gustibus," "Instans Tyrannus," "One Word More."

Group III.

Burke: "Speech on Conciliation with America."

Macaulay: "Life of Johnson."

Arnold: "Wordsworth," with a brief selection from Wordsworth's Poems.

Lowell: "On a Certain Condescension in Foreigners," and "Shakespeare Once More."

FRENCH. — Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission). — For a third credit unit in French as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in French will be given unless the candidate has presented elementary French on certificate, or has written the examination in elementary French.

No examination for a fourth credit in French will be given unless the candidate has presented both elementary and intermediate French upon certificate, or has written the examination in both elementary and intermediate French.

GERMAN. — *Elementary*: The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission). — For a third credit unit in German as an elective subject for entrance, when required units have been offered in German, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in German will be given unless the candidate has presented elementary German upon certificate, or has written the examination in elementary German.

No examination for a fourth credit in German will be given unless the candidate has presented both elementary and intermediate German upon certificate, or has written the examination for both elementary and intermediate German.

SPANISH. — *Elementary*: The necessary preparation for this examination is stated in the description of the two-year course in elementary Spanish recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year Spanish (elective subjects for admission). — For a third credit unit in Spanish as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth credit unit, the work described as "advanced" is expected.

No examination for a third unit in Spanish will be given unless the candidate has presented elementary Spanish on certificate, or has written the examination in elementary Spanish.

No examination for a fourth credit in Spanish will be given unless the candidate has presented both elementary and intermediate Spanish upon certificate, or has written the examination in both elementary and intermediate Spanish.

GREEK. — *Elementary*. — Greek grammar and composition: Translation into Greek of short sentences illustrating common principles of syntax.

The examination in grammar and prose composition will be based on the first four books of Xenophon's "Anabasis."

Intermediate. — Homer's "Iliad," Books I and II (omitting Book II, 494 to end), and the Homeric forms, constructions, idioms and prosody.

Prose composition, consisting of continuous prose based on Xenophon, and other Attic prose of similar difficulty.

Translation of passages of Homer at sight.

The examinations in Greek, elementary and intermediate, will be given in September only.

LATIN. — *Elementary*. — Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from Cæsar's "Gallic War," covering at least four books, and (b) the translation of passages of Latin prose at sight.

Intermediate. — Cicero (third oration "Against Catiline" and the orations "For Archias" and "For Marcellus") and sight translation of prose.

Advanced. — Vergil (*Æneid*, II, III and VI) and sight translation of poetry.

E. ADMISSION TO ADVANCED STANDING.

Candidates for admission to advanced standing, in addition to meeting the regular entrance requirements, must also pass examinations in those subjects already pur-

sued by the class they desire to enter. To meet this requirement, a student transferring to this college from another college or university of recognized standing must present the following credentials:—

1. A letter of honorable dismissal from the institution with which he has been connected.
2. A statement or certificate of his entrance record.
3. A statement from the proper officer showing a complete record of his work while in attendance.
4. A marked catalogue showing the courses pursued.
5. A statement from the proper officer, giving the total number of credits required for graduation by the institution from which the applicant is transferring, and, of this total, the number that the applicant has satisfactorily completed at the time of transfer.

These credentials should be presented to the Dean. Applications will be judged wholly on their merits and the college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

F. OTHER INFORMATION ABOUT ENTRANCE.

1. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable. (It is immaterial whether the pupil has entered by certificate or by examination.)
2. The examination in each subject may be either oral or written, or both. The standard required for passing an entrance examination is 60 per cent.
3. To matriculate, candidates must offer twelve and one-half of the fourteen and one-half units required for admission, and will be conditioned in those subjects not passed. At least five and one-half credits must be in the prescribed group. No candidate deficient in both algebra and plane geometry will be admitted.
4. Examinations for the removal of entrance conditions will be held during the first week of the second term.
5. Credits for entrance requirements, whether gained by certificate or by examination, will hold good for one year.
6. Examinations in part of the subjects required for entrance may be taken one year before entering college.
7. For information concerning expenses, scholarships, etc., see "General Information."
8. For information concerning admission to non-collegiate courses, see page 122.
9. Application for admission as a "Special Student" should be made to the Dean.
10. All entrance conditions must be removed before a student is permitted to enter upon the work of the sophomore year.

COURSES OF INSTRUCTION.

FRESHMAN YEAR.

TABLE OF FRESHMAN SUBJECTS.

[Groups A and B of each term are required of all Freshman men; groups A and C of all Freshman women]
For details, see the following tables of the first, second, and third terms, and the description of the courses.

First Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 1	3	-	3
Chemistry 1	3	4	5
or			
Chemistry 4	2	4	4
English 1	3	-	3
Language 1 or 4 (French or German)	3	-	3
Mathematics 1 (Algebra)	4	-	4
Group B; for men:			
Military 1 (or Physical Education 7)	-	3	2
Physical Education 1	1	-	1
Physical Education 2	-	2	1
Group C; for women:			
Rural Home Life 1	2	-	2
Physical Education 4	-	3	2

Second Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 2	3	-	3
Chemistry 2	3	4	5
or			
Chemistry 5	2	4	4
English 2	3	-	3
Language 2 or 5 (French or German)	3	-	3
Mathematics 2 (Higher Algebra)	3	-	3
or			
Mathematics 3 (Solid Geometry)	3	-	3
Mathematics 4 (Mensuration)	2	-	2
Group B; for men:			
Military 2 (or Physical Education 8)	-	3	2
Group C; for women:			
Physical Education 5	-	3	2

Third Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Agriculture 3	3	-	3
Botany 3	2	4	4
English 3	3	-	3
Language 3 or 6 (French or German)	3	-	3
Mathematics 5 (Trig.)	3	-	3
Group B; for men:			
Military 3 (or Physical Education 9)	-	3	2
Physical Education 3	-	2	1
Group C; for women:			
Physical Education 6	-	3	2
Agriculture 6	2	-	2

SOPHOMORE YEAR.

TABLE OF SOPHOMORE SUBJECTS.

[Groups A and B of each term are required of all Sophomore men; groups A and C, of all Sophomore women. In addition one of the "Divisional Elective Groups" is to be elected as a unit by each Sophomore. For details, see the following tables of the first, second, and third terms, and the description of the courses.]

First Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
English 25	2	-	2
English 28	1	-	1
Physics 25	3	2	4
Zoölogy 26	2	4	4
Group B; for men:			
Military 25 (or Physical Education 30)	-	3	2
Physical Education 25	-	2	1
Group C; for women:			
Physical Education 27	-	5	3
<i>Divisional Elective Groups.</i>			
Agriculture:			
Agronomy 25	2	4	4
Animal Husbandry 25	2	2	3
Horticulture:			
Entomology 26	4	-	4
Horticulture 25	1	4	3
Landscape Gardening:			
Drawing 25	-	8	4
Horticulture 25	1	4	3
Science:			
Entomology 26	4	-	4
Modern Language (French or German)	3	-	3
Rural Social Science:			
Economics 25	5	-	5
Elective (optional)	-	-	3
Rural Home Life:			
Microbiology 30	-	6	3
Rural Home Life 28	1	6	4

Second Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
Botany 25	1	4	3
English 26	2	—	2
English 29	1	—	1
Group B; for men:			
Military 26 (or Physical Education 31)	—	3	2
Group C; for women:			
Physical Education 28	—	3	2
<i>Divisional Elective Groups.</i>			
Agriculture:			
Animal Husbandry 26	2	2	3
Chemistry 30	3	4	5
Physics 26	3	2	4
Horticulture:			
Agricultural Economics 26	4	2	5
Horticulture 26	1	4	3
Chemistry 25	2	4	4
or			
Physics 26	3	2	4
Landscape Gardening:			
Drawing 26	—	6	3
Horticulture 26	1	4	3
Mathematics 26	3	—	3
Physics 26	3	2	4
Science:			
Chemistry 25	2	4	4
Modern Language (French or German)	3	—	3
Physics 26	3	2	4
Rural Social Science:			
Agricultural Economics 26	4	2	5
Agricultural Education 29	3	—	3
History and Government 25	3	—	3
Elective (optional)	—	—	3
Rural Home Life:			
Chemistry 30	3	4	5
Drawing 30	—	6	3
Rural Home Life 29	1	6	4

Third Term.

COURSE AND NUMBER.	Class Hours.	Laboratory Hours.	Credit Hours per Week.
<i>Required Groups.</i>			
Group A; for men and women:			
English 27	2	—	2
Group B; for men:			
Military 27 (or Physical Education 32)	—	3	2
Physical Education 26	—	2	1
Group C; for women:			
Physical Education 29	—	5	3
<i>Divisional Elective Groups.</i>			
Agriculture:			
Agricultural Engineering 27	—	4	2
Agricultural Engineering 30	—	8	4
or			
Physics 27	3	2	4
Agronomy 27	3	2	4
English 30	1	—	1
History and Government 27	2	—	2
Microbiology 30	—	6	3
Horticulture:			
Agricultural Engineering 30	—	8	4
Agronomy 27	3	2	4
English 30	1	—	1
History and Government 27	2	—	2
Horticulture 27	5	—	5
Landscape Gardening:			
Drawing 27	—	8	4
English 30	1	—	1
History and Government 27	2	—	2
Horticulture 27	5	—	5
Mathematics 27	—	6	3
Science: ¹			
Botany 26	1	6	4
Chemistry 26	1	4	3
Entomology 28	—	6	3
Modern Language (French or German)	3	—	3
Physics 27	3	2	4
Rural Social Science:			
English 30	1	—	1
History and Government 27	2	—	2
Rural Sociology 27	3	—	3
Elective	—	—	8-11
Rural Home Life:			
Agricultural Engineering 33	2	4	4
English 30	1	—	1
History and Government 27	2	—	2
Microbiology 33	3	2	4
Rural Home Life 32	—	6	3

¹ Fourth Science optional.

MAJORS: JUNIOR AND SENIOR YEARS.

GENERAL STATEMENT.

A major consists of 60 credit hours of correlated work, which is arranged by the student and his adviser.

The list of courses found under each major on subsequent pages should not be considered as necessarily a rigid program to be followed. The heads of departments have suggested this series of courses as the best for the average student majoring in their departments. Advisers may, however, make modifications to suit the particular needs of the student, provided these modifications conform precisely to the class schedule as published for the year.

RULES GOVERNING MAJORS.

RULE 1. *Election.* — Each student, before the first term of his junior year, shall elect a major subject from the list of majors given below; and this major shall consist of 60 credit hours of correlated work.

RULE 2. *Minimum Credits.* — The minimum number of credits for graduation shall be 120 junior-senior credit-hours in addition to the satisfactory completion of the required courses of the freshman year and of the required and elective groups of the sophomore year.

RULE 3. *Maximum Credits.* — The maximum number of credits for any term of the junior or senior year shall be 22; the minimum shall be 18.

RULE 4. *Humanities and Rural Social Science.* — A minimum of 18 credit hours in the Divisions of the Humanities and Rural Social Science will be required of all students during their junior and senior years, with the following restriction: that a minimum of 5 credit hours will be required in each of the divisions.

RULE 5. *Advisers.* — The work of each junior and senior will be under the immediate supervision of an instructor designated as major adviser. Ordinarily, the major adviser will be the head of the department in which the student elects his major. The adviser has full authority to prescribe the student's work up to 60 hours. He will, however, so far as practicable, recognize the individual needs of the student. It is also expected that students will seek the counsel of the adviser with respect to the remaining courses required for graduation.

RULE 6. *Free Electives.* — Each student during his junior and senior years is required to take 60 hours in his major and also 18 hours in the Divisions of the Humanities and Rural Social Science, making a total of 78 hours (but see Rule 4). He is allowed free choice of courses to complete his required hours.

RULE 7. *Registration.* — No junior or senior shall register until his major course of study is approved by his adviser.

(1) Course cards for recording the election of majors will be issued from the Schedule Room five weeks before the close of each term.

(2) This card must be submitted by each student to his major adviser, who will lay out the course for the succeeding term and countersign the card.

(3) Each course card must be filled out, giving the name of student, his major, his class and the name and address of parent or guardian. When the major courses have been entered on this card, and the hours of free elections added by the student, the card, accompanied by one hour plan, must be returned to the Schedule Room two weeks before the beginning of the final examination period.

RULE 8. *Change of Major.* — Applications for change of major may be made to the dean in writing at any time; when approved by both major advisers concerned and by the dean and the committee on scholarship, they become operative at the beginning of the term following, provided that no change in the selection of a major may be made by any student after registration day of his senior year.

MAJOR REQUIREMENTS.

The following groups of courses represent the requirements of the several majors of the junior and senior years, subject to the regulations stated on page 32. The arabic figure following the name and catalog number of each course represents the credit-hours.

AGRONOMY. Professor ARTHUR B. BEAUMONT, *Adviser*.

YEAR.	Term I.	Term II.	Term III.
Junior .	Agronomy 75 . . . 5 Animal Husbandry 50 . . 3 Botany 58 3	Agronomy 50 3 Chemistry 25 4	Agronomy 51 3 Botany 26 4 Chemistry 26 3 Geology 52 5 Physics 27 4
Senior .	Agronomy 75 5 Botany 78 5 Chemistry 51 6 Chemistry 61 5 Farm Management 76 . . 3	Agricultural Engineering 78 5 Agronomy 77 5 Botany 79 3 Chemistry 52 6	Agricultural Engineering 79 5 Agronomy 51 3 Botany 80 3 Farm Management 77 . . 3

ANIMAL HUSBANDRY. Professor JULIUS H. FRANDSEN, *Adviser*.

YEAR.	Term I.	Term II.	Term III.
Junior .	Animal Husbandry 50 . . 3 Dairy 50 5	Agronomy 50 3 Animal Husbandry 54 . . 3 Farm Management 51 . . 3 Veterinary Science 50 . . 5	Agronomy 51 ¹ 3 Animal Husbandry 52 . . 3 Animal Husbandry 53 . . 3 Dairying 52 ¹ 5
Senior .	Agricultural Engineering 75 ¹ 5 Animal Husbandry 75 . . 3 Farm Management 76 . . 3 Veterinary Science 75 or 78 5 or 3	Agricultural Engineering 78 ¹ 5 Agronomy 77 ¹ 5 Animal Husbandry 76 . . 3 Animal Husbandry 81 . . 1 Veterinary Science 76 or 79 5 or 3	Agronomy 51 ¹ 3 Animal Husbandry 77 . . 3 Animal Husbandry 80 . . 3 Animal Husbandry 82 . . 1 Farm Management 81 ¹ . . 2 Poultry 78 ¹ 5 Veterinary Science 77 or 80 5 or 3

¹ Suggested but not required.

DAIRY MANUFACTURES. Professor JULIUS H. FRANDSEN, *Adviser*.

YEAR.	Term I.	Term II.	Term III.
Junior .	Agricultural Education 51 ¹ 5 Animal Husbandry 50 . . 3 Dairying 50 5 Dairying 75 3 Dairying 76 4 Dairying 79 1	Chemistry 25 4 Dairying 51 1 Dairying 77 5 Economics 51 ¹ 5 Microbiology 51 5 Rural Sociology 51 ¹ . . 3 Veterinary Science 50 ¹ . . 5	Agricultural Engineering 81 ¹ 4 Dairying 52 5 Dairying 53 2 Dairying 78 5 Dairying 80 1 Economics 52 ¹ 5
Senior .	Agricultural Economics 83 ¹ 2 Chemistry 61 5 Dairying 75 3 Dairying 76 4 Dairying 79 1 Microbiology 82 5	Agricultural Economics 75 ¹ 5 Agricultural Economics 76 . 5 Animal Husbandry 81 . . 1 Chemistry 81 5 Dairying 77 5 Farm Management 51 ¹ . . 3	Agricultural Economics 53 5 Agricultural Economics 84 ¹ 2 Dairying 78 5 Dairying 80 1

¹ Suggested but not required.

FARM MANAGEMENT. PROFESSOR JAMES A. FOORD, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Animal Husbandry 50 . . . 3 Dairying 50 5 Pomology 50 3	Agronomy 50 3 Farm Management 51 . . . 3 Pomology 51 3	Agronomy 51 ¹ 3 Animal Husbandry 52 ¹ . . 3 Animal Husbandry 53 . . . 3 Dairying 52 ¹ 5 Forestry 58 3
Senior .	Agricultural Engineering 75 5 Animal Husbandry 75 ¹ . . 3 Farm Management 76 . . 3 Veterinary Science 75 . . 5	Agricultural Engineering 78 5 Agronomy 77 5 Animal Husbandry 76 ¹ . . 3 Farm Management 78 . . . 1	Agricultural Engineering 79 5 Agronomy 51 ¹ 3 Animal Husbandry 77 . . 3 Farm Management 77 . . 3 Farm Management 79 . . . 1 Farm Management 81 ¹ . . 2 Pomology 78 ¹ 3 Poultry 78 ¹ 5

¹ Suggested but not required.POULTRY HUSBANDRY. PROFESSOR JOHN C. GRAHAM, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Agricultural Education 52 ¹ 5 Agricultural Engineering 75 5 Poultry 50 5	Agricultural Education 55 ¹ 5 Farm Management 51 ¹ . . 3 Poultry 51 5 Zoölogy 76 3	Agricultural Economics 53 5 Agricultural Engineer- ing 30 ¹ 4 Poultry 52 5 Vegetable Gardening 50 ¹ 5
Senior .	Farm Management 76 . . 3 Poultry 75 3 Poultry 76 4 Veterinary Science 78 or 85 . 3	Agricultural Economics 52 ¹ 5 Poultry 77 5 Veterinary Science 79 or 86 . 3	Poultry 79 4 Veterinary Science 80 . . . 3 or 87 3

¹ Suggested but not required.FLORICULTURE. PROFESSOR CLARK L. THAYER, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Botany 50 2 Floriculture 50 4 Floriculture 53 4	Botany 51 2 Floriculture 51 4	Floriculture 52 4 Floriculture 55 3
Senior .	Floriculture 75 3 Horticulture 50 5	Floriculture 76 3 Floriculture 79 3	Floriculture 77 3 Floriculture 80 2-3 Horticulture 51 5 Horticulture 75 2

ADVISED. — The department advises all students who major in this subject to take Entomology 50, Landscape Gardening 75, Botany 78, 79 and 80, and Agricultural Economics 53, 83 and 84.

LANDSCAPE GARDENING. PROFESSOR FRANK A. WAUGH, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Horticulture 50 5 Landscape Gardening 50 . . 5 Landscape Gardening 78 or 79 3	Landscape Gardening 51 . . 4	Floriculture 55 3 Horticulture 51 5 Landscape Gardening 52 5
Senior .	Landscape Gardening 75 . . 3 Landscape Gardening 76 . . 4 Landscape Gardening 78 or 79 3	Landscape Gardening 80 . . 4 Landscape Gardening 81 . . 4	Landscape Gardening 77 4 Landscape Gardening 82 4 Horticulture 75 2

POMOLOGY. PROFESSOR FRED C. SEARS, *Adviser.*

YEAR.	Term I.		Term II.		Term III.	
Junior .	Botany 50	2-6	Pomology 51	3	Agricultural Economics 53	5
	Entomology 50	3	Pomology 54	3	Pomology 52	3
	Pomology 50	3				
Senior .	Horticultural Manufac- tures 75	5	Agronomy 77	5	Agricultural Engineering 78	5
	Pomology 75	3	Horticultural Manufac- tures 76	3	Horticultural Manufac- tures 77	2
	Pomology 77	3	Pomology 76	3	Horticulture 75	2
	Pomology 80	1	Pomology 81	1	Pomology 78	3
					Pomology 82	1

VEGETABLE GARDENING. PROFESSOR FRANK A. WAUGH, *Adviser.*

YEAR.	Term I.		Term II.		Term III.	
Junior .	Agronomy 75	5	Botany 51	2	Agricultural Economics 53	5
	Botany 50	2	Vegetable Gardening 52	5	Vegetable Gardening 53	5
Senior .	Agronomy 75	5	Horticultural Manufac- tures 76	3	Horticulture 75	2
	Floriculture 53	4	Vegetable Gardening 76	5	Vegetable Gardening 77	5
	Horticultural Manufac- tures 75	5				
	Vegetable Gardening 75	5				

ECONOMIC BOTANY. PROFESSOR A. VINCENT OSMUN, *Adviser.*

YEAR.	Term I.		Term II.		Term III.	
Junior .	Botany 52	3	Agronomy 50 ¹	3	Agricultural Education 56 ¹	5
	Botany 58 or 61	3	Botany 53	3	Botany 54 or	3
	Chemistry 51	6	Botany 59 or 62	3	Botany 60 or 63	3
	English 65 ¹	3	Chemistry 52	6	Botany 55	5
	French or German 50	3	Entomology 51 ¹	3	English 52 ¹	3
			French or German 51	3	French or German 52	3
					Geology 52 ¹	5
Senior .	Botany 58 or 61	3	Botany 59 or 62	3	Agricultural Education 56	5
	Botany 75 or	5	Botany 76 or	5	Botany 60 or 63	3
	Botany 78	5	Botany 79	3 or 5	Botany 77 or	5
	Chemistry 80 ¹	5	Chemistry 86 ¹	3	Botany 80	3 or 5
			Entomology 90 ¹	3		

¹ Suggested but not required.AGRICULTURAL CHEMISTRY. PROFESSOR CHARLES A. PETERS, *Adviser.*

YEAR.	Term I.		Term II.		Term III.	
Junior .	Chemistry 51	6	Chemistry 52	6	Chemistry 53	6
	Chemistry 61	5	Chemistry 62	6	Chemistry 63	5
Senior .	Chemistry 75	6	Chemistry 86	3	Chemistry 87	3
	Chemistry 80	5	Chemistry 90, 92, 94, 96 ¹	5	Chemistry 91, 93, 95, 97 ¹	5

Note.—A knowledge of German is required. Students having had no German previously should elect it at the beginning of the sophomore year.

¹ Students will select one course from groups 90, 92, 94, 96 and 91, 93, 95, 97 respectively.

ECONOMIC ENTOMOLOGY. PROFESSOR HENRY T. FERNALD, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Chemistry 51 ¹ . . . 6 Entomology 52 . . . 2 Entomology 53 . . . 5 French or German 50 ¹ . 3	Botany 51 . . . 4 Chemistry 52 ¹ . . . 6 Entomology 55 . . . 4 Entomology 56 . . . 3 French or German 51 ¹ . 3	Chemistry 53 ¹ . . . 6 Entomology 57 . . . 2 Entomology 65 . . . 3 Entomology 75 . . . 4 French or German 52 ¹ . 3
Senior .	Chemistry 80 . . . 5 Entomology 76 . . . 5 Entomology 79 . . . 3 Entomology 85 ¹ . . . 3 Horticulture 50 ¹ . . . 5 Zoology 50 . . . 3	Entomology 77 . . . 3 Entomology 90 . . . 3 Pomology 79 ¹ . . . 3 Zoology 51 . . . 3	Entomology 78 . . . 4 Geology 52 . . . 5 Horticulture 51 ¹ . . . 5 Pomology 78 ¹ . . . 3 Zoology 52 . . . 3

¹ Suggested but not required.MICROBIOLOGY. PROFESSOR CHARLES E. MARSHALL, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Microbiology 50 . . . 5 Microbiology 60 . . . 3	Microbiology 50 . . . 5 Microbiology 51 . . . 5 Microbiology 61 . . . 3	Microbiology 50 . . . 5 Microbiology 51 . . . 5 Microbiology 52 . . . 5 Microbiology 62 . . . 3
Senior .	Microbiology 60 . . . 3 Microbiology 81 . . . 5 Microbiology 82 . . . 5	Microbiology 61 . . . 3 Microbiology 75 . . . 5 Microbiology 80 . . . 5	Microbiology 62 . . . 3 Microbiology 76 . . . 5 Microbiology 83 . . . 5

AGRICULTURAL ECONOMICS. PROFESSOR ALEXANDER E. CANCE, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Agricultural Economics 50 . 5 Agricultural Education 55 . 5 English 65 3	Agricultural Economics 52 . 5 Economics 51 5 Rural Sociology 51 ¹ . . 3	Agricultural Economics 53 . 5 Economics 52 5 Rural Sociology 52 ¹ . . 3
Senior .	Agricultural Economics 77 . 5 Agricultural Economics 79 . 5	Agricultural Economics 75 . 5 Agricultural Economics 76 . 5	Agricultural Economics 78 . 3 Agricultural Economics 87 . 3

¹ Suggested but not required.AGRICULTURAL EDUCATION. PROFESSOR WINTHROP S. WELLES, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Agricultural Education 51 . 5 Agricultural Education 55 . 5	Agricultural Education 51 . 5 Agricultural Education 55 . 5 Agricultural Education 56 . 5	Agricultural Education 56 . 5
Senior .	Agricultural Education 52 . 5 Agricultural Education 76 . 5 Agricultural Education 80 1-5 Agricultural Education 85 . 3	Agricultural Education 75 . 3 Agricultural Education 80 1-5 Agricultural Education 95 . 3	Agricultural Education 76 . 5 Agricultural Education 77 . 3 Agricultural Education 79 . 3 Agricultural Education 80 1-5 Agricultural Education 81 . 2 Agricultural Education 83 . 2

COURSES IN EDUCATION ADVISED. — (a) For general teaching program six of the following courses: 51, 52, 55, 56, 75, 79, 89, 95. (b) For vocational agricultural teaching 51, 56 or 75, 76, 80. (c) For extension teaching 51, 56, 76, 77, 80.

RURAL SOCIOLOGY. Professor FREDERICK M. CUTLER, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Economics 50 . . . 5 Rural Sociology 50 . . . 3	Economics 51 . . . 5 Rural Sociology 51 . . . 3	Economics 52 . . . 5 Rural Sociology 52 . . . 3
Senior .	Agricultural Economics 50 . 5 Economics 75 . . . 5 Rural Sociology 79 . . . 1-3	Agricultural Economics 52 . 5 Agricultural Economics 75 . 5 Rural Sociology 77 . . . 3 Rural Sociology 80 . . . 1-3	Agricultural Economics 53 . 5 Rural Sociology 81 . . . 1-3

RURAL HOME LIFE. Professor EDNA L. SKINNER, *Adviser.*

YEAR.	Term I.	Term II.	Term III.
Junior .	Agricultural Engineering 53 4 Chemistry 80 . . . 5 Economics 50 . . . 5 Rural Home Life 50 . . . 5	Rural Home Life 51 . . . 5	Agricultural Economics 54 3 Rural Home Life 52 . . . 5 Rural Home Life 61 . . . 3 Rural Sociology 27 . . . 3
Senior .	Horticultural Manufac- tures 80 . . . 4 Rural Home Life 76 . . . 4 Rural Home Life 81 . . . 3	Horticultural Manufac- tures 81 . . . 3 Rural Home Life 78 . . . 3 Rural Home Life 82 . . . 3	Rural Home Life 83 . . . 3

DESCRIPTION OF COURSES.

DIVISION OF AGRICULTURE.

Director HASKELL (Acting Chairman).

[Heavy-faced Roman numerals indicate the term in which the course is given. Numbering of courses, 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Agriculture.

1. **I.** 2. **II.** 3. **III.** AGRICULTURE. — Required course for all freshmen. A survey course, tracing the development of man as influenced by agriculture. It considers those problems which our complicated, present-day civilization looks to agriculture to solve, — problems practical, scientific, commercial, sociological. The object of the course is to give to students the agricultural concept, and an appreciation of the close relationship of all lines of human activity to the great problems of agriculture.
3 class hours.

Credit, 3.

Assistant Professor LANPHEAR.

6. **III.** AGRICULTURAL OPPORTUNITIES FOR WOMEN. — For freshman women. Designed to show the woman who is interested in agriculture what opportunities there are for her in that field, and how she may best take advantage of them. The types of agricultural work for which women are best adapted are discussed. A study is made of some of the special problems which confront the woman farmer, and her best ways of solving them.
2 class hours.

Credit, 2.

Miss HAMLIN.

Agricultural Engineering.

Professor GUNNESS, Assistant Professor MARKUSON, Mr. PUSHEE, Mr. NEWLON.

The courses in agricultural engineering are planned to give a working knowledge of those phases of engineering which apply directly to the farm. It is expected that the student will acquire a clear understanding of modern farm practice as it relates to permanent improvements of the farm and the farmstead, and in the selection and use of farm equipment.

This department has offices in Stockbridge Hall. The work on farm structures is given in the large drawing room in the same building. This room is fitted with thirty drawing tables. Models and blue prints are available for the study of farm buildings. A set of post molds and a machine for making cement tile afford opportunity for practical work with cement.

The agricultural engineering shop is a one-story structure 100 by 126 feet. The carpenter shop in this building is fitted with benches fully equipped with tools for each student. A band saw, woodturning lathe, circular saw and jointer are the power tools. The general repair shop is equipped with forges, benches, drill press, power hammer, shears, and grinders. The laboratory for farm machinery and farm motors is equipped with a complete line of field machines, gasoline engines, tractors and pumps, water systems and farm lighting plants. A complete assortment of engine accessories, consisting of carburetors, magnetos, etc., is available for thorough instruction in gas engines. The instruction on small field machines is given in the basement of Stockbridge Hall, and the work on steam engines and steam heating is given in Flint Laboratory.

Required Courses.

27. **III. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. The exercises include lettering, geometric construction, orthographic projection, isometric drawing, and the making of working drawings of simple farm equipment. This course is for the agricultural student who wishes to learn the use of drawing instruments, the reading of blue prints, and some of the general practices of drafting valuable to every agriculturist. Students who contemplate taking Agricultural Engineering 75 will find this course helpful.

2 2-hour laboratory periods, credit, 2.
Assistant Professor MARKUSON.

30. **III. SHOP PRACTICE.** — For sophomores; juniors and seniors may elect. Practice is given in the use of carpentry tools by exercises in bench work, repair of farm equipment and farm building construction. Exercises in forge work, pipe fitting, soldering, babbitting and fitting bearings, lining up shafting, lacing belts and splicing rope. Practice in the use of machinists' tools, such as file, cold chisel, drill press, lathe, taps and dies.

4 2-hour laboratory periods, credit, 4.
Mr. PUSHEE and Mr. NEWLON.

33. **III. MECHANICS OF THE HOUSEHOLD.** — For sophomores. A study of mechanics in their relation to the household, including heat, light, electricity, the testing, care and maintenance of household equipment and appliances.

2 class hours. 2 2-hour laboratory periods, credit, 4.
The DEPARTMENT.

Elective Courses.

53. **I. HOUSE PLANNING AND CONSTRUCTION.** — For juniors; seniors may elect. Plan designs of the small house will be made. The arrangement of interior equipment, especially in the kitchen; lighting; heating; water supply; and sewage disposal will be studied together with a brief history of the house, materials, construction methods, equipment, and architectural styles. Consideration will be given to the economics of house building, including financing, maintenance and overhead expense.

2 class hours. 2 2-hour laboratory periods, credit, 4.
Assistant Professor MARKUSON.

75. **I. FARM STRUCTURES.** — For seniors; juniors may elect. A study of the strength and durability of concrete, wood, stone, and clay products, and of the mechanical principles underlying their use in farm construction. The design of various farm buildings, such as the general purpose barn, dairy stable, hog house, sheep barn, milk house, etc. In the drafting room, details of construction will be worked out, a study of the mechanics of simple roof trusses will be made, and a complete design of some major farm building will be finished in all essential details. Blueprints of the finished design will be made.

2 class hours. 3 2-hour laboratory periods, credit, 5.
Assistant Professor MARKUSON.

78. **II and III. FARM MOTORS.** — For seniors; juniors may elect. This course deals with the gasoline engine as used for stationary work, automobiles and tractors. The theory of the internal combustion engine is taken up in order to emphasize the effect of design and operation on power and economy. The various types of carburetors, ignition, and lubrication systems are studied in detail. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing.

3 class hours. 2 2-hour laboratory periods, credit, 5.
Professor GUNNESS and Mr. PUSHEE.

79. III. DRAINAGE AND IRRIGATION ENGINEERING. — For seniors; juniors may elect. Covers the engineering phase of drainage and irrigation. The various systems are studied, and practice is given in the design of drainage and irrigation systems. Field work gives practice in surveying for drains, platting, locating drains, erecting batterboards and laying tile. Practice is given in assembling equipment for spray irrigation, and the flow of water through nozzles is studied by means of laboratory tests.

2 class hours.

2 3-hour laboratory periods, credit, 5.
Assistant Professor MARKUSON.

81. III. DAIRY MECHANICS. — For juniors; seniors may elect. A study of dairy machinery, including steam boilers, engines, pumps, traps, refrigeration machinery, and heat-controlling devices. Practice is given in pipe fitting, packing valves, lacing belts, and similar repair jobs on the equipment used in dairy plants.

3 class hours.

1 3-hour laboratory period, credit, 4.
Professor GUNNESS and Mr. NEWLON.

Agronomy.

Professor BEAUMONT, Assistant Professor CUBBON, Mr. THAYER.

The courses in agronomy are designed to give fundamental instruction concerning the soil and the principal products of the field. The basic course in soils is required of students majoring in the divisions of agriculture, horticulture, and rural social science. The introductory course in field crops is required of students electing major work in agriculture. The elective courses are designed to meet the needs of those specializing in soils and field crops and other specialized fields in pure and applied science.

The department is located in Stockbridge Hall. Laboratories for soils and fertilizers include one for elementary work, supplied with locker equipment for 200 students, and one for advanced work, accommodating 80 students. These laboratories are equipped with apparatus necessary for the study of soils and fertilizers, including ovens, balances, centrifuge, microscopes, etc. Storerooms, stockrooms and balance rooms are conveniently near the laboratories. There is also a workroom attached, equipped with power machinery for grinding soils, fodders, and similar materials.

The laboratories for crops include one for seed study with lockers for 50 students and one for the study of cereals, forage crops, roots, etc., with lockers for 48 students. The equipment of these laboratories includes steam ovens, constant temperature electric ovens, ovens for seed germination, Brown-Duval moisture apparatus, balances, microscopes, and collections of seeds, grasses, tubers, weeds, etc. Root cellars and a special grain storeroom are also used for crops work.

A modern steam-heated greenhouse and a contiguous head-house used for work in soils and crops, are a valuable part of the equipment. Near the greenhouse is a crop garden, in which different varieties of corn, grasses, clovers, etc., are grown as demonstrations and as a source of material for class work. In addition, the general college farm of 250 acres is used for field study in soils and crops and as a source of material.

Required Courses.

25. I. FIELD CROP PRODUCTION. — For sophomores. Field crops contribute the greatest proportion of the agricultural wealth of our country. This is an introductory course designed to acquaint the student with the most important field crops, methods of production and the problems arising in their culture.

2 class hours.

2 2-hour laboratory periods, credit, 4.
The DEPARTMENT.

27. III. SOIL MANAGEMENT. — For sophomores. The soil is the indispensable basis for economic crop production. This is an introductory course in which the whole subject is covered in a general way, and includes a study of soils and their properties, classification, management, methods of improvement and maintenance.

Part II.

nance of fertility. The use of manures, fertilizers and soil amendments will be given as much attention as the time allows. Students taking this course should have had elementary training in the natural sciences.
3 class hours.

1 2-hour laboratory period, credit, 4.
The DEPARTMENT.

Elective Courses.

50. **II. CROP PRODUCTION FOR DAIRY AND STOCK FARMS.**—For juniors; seniors may elect. An intensive study of forage crops, tubers and roots and the problems of their production under New England conditions. Special attention will be given to the conditions found on the Massachusetts general farm on which dairying and stock raising are important.
2 class hours.

1 2-hour laboratory period, credit, 3.

51. **III. ADVANCED FIELD CROPS (1926-27).**—For juniors and seniors. This course is designed primarily for those specializing in field crops. Studies begun in course 50 will be continued and extended to crops of importance beyond the range of New England. Theory and practice of crop improvement by plant breeding will be given attention. Given in alternate years.
2 class hours.

1 2-hour laboratory period, credit, 3.

Prerequisite, Agronomy 50.

75. **I. ADVANCED SOILS (1927-28).**—For juniors and seniors. A continuation of studies begun in Agronomy 27 with special emphasis placed on soil classification and land utilization. Problems arising in the management of extreme soil types and specific problems of moisture control and tillage will be given special consideration. Given in alternate years.
2 class hours.

1 4-hour and 1 2-hour laboratory period, credit, 5.

Professor BEAUMONT.

Prerequisite, Agronomy 27.

77. **II. MANURES, FERTILIZERS AND SOIL AMENDMENTS.**—For juniors and seniors. An advanced course in which are studied manures, fertilizers and other materials applied to the soil for crop nutrition; experimental work bearing on soil fertility and plant nutrition; and theory and practice concerning the use of manures, fertilizers, and lime.
3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor BEAUMONT and Assistant.

Prerequisite, Agronomy 27; advised, Chemistry 61.

Animal and Dairy Husbandry.

Professor FRANDSEN, Assistant Professor RICE, Assistant Professor GLATFELTER, Assistant Professor SMITH, Mr. MACK.

This department is equipped to give complete courses of training in dairy and animal husbandry lines. In addition to Flint Laboratory, the dairy manufactures building, with its modern equipment for the manufacture of dairy products, there is also available a dairy herd comprising some one hundred and sixty head of good representatives of the Ayrshire, Guernsey, Holstein-Friesian and Jersey breeds.

Grinnell Arena, the judging pavilion, offers excellent facilities for the scoring and judging of all farm animals, for in addition to the dairy breeds mentioned above there are available representatives of the following breeds: Percheron draft horses, Shorthorn cattle, Hereford beef cattle, Southdown and Shropshire sheep, and Chester White and Berkshire swine. All of these facilities offer exceptional opportunities to students interested in the various phases of live-stock enterprises.

The well-arranged and equipped college farm and barns give students splendid opportunities to study the best methods of managing a farm devoted primarily to the production of feed crops together with their efficient disposal to live stock.

Courses are offered to meet the needs of students interested in:

Animal Husbandry Group.

The various phases of live-stock farming and market milk production.
Agricultural college teaching.
High and secondary school teaching.
Federal, state, railroad, bank or breed extension services.
Federal or state experiment station service.
Meat packing industry.
Commercial feed industry.

Dairy Manufactures Group.

The handling of market milk and the science and art of butter making, ice cream making, and cheese making.
Agricultural college teaching and experiment station work.
High school or secondary school teaching.
Extension work.
Research and investigational work.
Graduate work to broaden a knowledge of dairying.

ANIMAL HUSBANDRY.

Required Courses.

25. **I. DAIRY BREEDS.** — For sophomores; juniors and seniors may elect. This course includes a survey of the dairy industry. The origin, history, development and characteristics of the dairy breeds, and their adaptability to New England conditions are studied. Preliminary work in scoring animals according to the recognized standards is given, followed by comparative judging and placing.
2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FRANDSEN and Assistant Professor RICE.

26. **II. HORSES, SWINE, SHEEP AND BEEF CATTLE.** — In this course consideration is given to the origin, history, development and characteristics of the breeds of horses, swine, sheep and beef cattle. Types, market classes and grades of live stock are studied, together with their economic importance to the country in general, and Massachusetts in particular. Preliminary work is given in scoring each type of animal, followed by judging and placing of groups. Textbooks, Types and Market Classes of Livestock, Vaughan; Types and Breeds of Farm Animals, Plumb.
2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor GLATFELTER.

Elective Courses.

50. **I. THE NUTRITION OF FARM ANIMALS.** — For juniors; seniors may elect. This course consists of a study and application of the principles of physiological chemistry to the practical problems of animal feeding and growth. Consideration will be given to the chemical composition of plant and animal life; physiology of digestion; functions of vitamins, minerals, protein and energy; feeding standards and their application; the composition of farm crops, their by-products, and commercially mixed feeds; and their utilization for the economical production of live stock and their products.
3 class hours.

Credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25 and 26.

52. **III. ADVANCED LIVE STOCK JUDGING.** — For juniors; seniors may elect. This course serves as a laboratory supplement to Animal Husbandry 53. It has three aims: (a) to train the student to see and evaluate differences in farm animals; (b) to begin the training of men who will act as judges of live stock at fairs; (c) to develop judging teams in both Fat Stock and Dairy Cattle to represent the College in the intercollegiate live stock judging contest at the leading expositions. Trips will be taken each Saturday during the term to the leading herds and flocks in Massachusetts and nearby states.

1 2-hour laboratory period on Friday and all day Saturday, credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25 and 26.

53. **III. THE BREEDING AND IMPROVEMENT OF FARM ANIMALS.** — For juniors; seniors may elect. This course is planned to give a broad view of the rise of many types and breeds from one ancestral stock; to note the origin, value and permanence of certain variations and to make clear the reasons for certain excellencies. The course also deals with the physiology of reproduction and genetics as a foundation for experience in actual production.

3 class hours.

Credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25 and 26; Zoölogy 26.

54. **II. MEAT AND MEAT PRODUCTS.** — For juniors; seniors may elect. This course deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock; packing house methods; the magnitude and trends of the meat industry, and the opportunities of local New England marketing.

1 class hour.

1 4-hour laboratory period, credit, 3.

Assistant Professors RICE and GLATFELTER.

75. **I. DAIRY CATTLE AND MILK PRODUCTION.** — For seniors. A consideration is given to the application of the principles of animal nutrition to the particular problems of dairy cattle feeding. Methods of feeding for high milk production are studied. Cost of milk production, and breeding and management problems are carefully considered. A survey is made of recent experiment station results.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 25, 50, 52, 53.

76. **II. BEEF AND SHEEP PRODUCTION.** — For seniors. Application is made of the principles of nutrition to the feeding of beef cattle and sheep. Feeding, breeding, and management problems are considered. A survey is made of recent experiment station work, and special study is given to the opportunities for the Massachusetts farmer in producing high quality beef and lamb.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor GLATFELTER.

Prerequisites, Animal Husbandry 26, 50, 52, 53.

77. **III. HORSES AND SWINE PRODUCTION.** — For seniors. This course is planned to familiarize students with the application of the principles of nutrition to the feeding of horses and swine. Physiological and economic factors are considered in selecting suitable feeds. Cost of production, breeding and managerial problems in commercial horse and pork production are considered. A study is also made of recent experiment station results in feeding, breeding and management.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor RICE.

Prerequisites, Animal Husbandry 26, 50, 52, 53.

80. **III. DAIRY HERD MANAGEMENT.** — For seniors. The course consists of a study of systems of management of dairy herds; record form; methods of cost accounting; fitting for production, show and sale; cow testing and bull association work.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FRANDSEN and Assistant Professor RICE.

81. **II. ANIMAL HUSBANDRY SEMINAR.** — Required of students majoring in Animal Husbandry. Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational

work and practices will be conducted. Frequent addresses will be made to the class by prominent breeders, and scientists.

1 class hour.

Credit, 1.

The DEPARTMENT.

82. **III. ANIMAL HUSBANDRY SEMINAR.** — A continuation of 81 **II**.

1 class hour.

Credit, 1.

The DEPARTMENT.

DAIRYING.

Elective Courses.

50. **I. GENERAL DAIRYING.** — For juniors; seniors may elect. A general course, prerequisite to all other dairy courses, except courses 51 and 53, and for those who wish to take only one course in dairying to get a general knowledge of the subject. The work covers briefly a study of milk, its secretion, composition and various tests applied thereto; methods of handling milk and cream; the use of separators; elements of butter making, cheese making and ice cream making.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor FRANDSEN and Assistant Professor SMITH.

51. **II. JUDGING DAIRY PRODUCTS.** — For juniors; seniors may elect. A study of standards and grades of dairy products, with practice in judging milk and ice cream as well as butter and cheese. The student learns to recognize quality in dairy products and to detect specific defects; their causes and prevention.

1 2-hour laboratory period, credit, 1.

Mr. MACK.

52. **III. MARKET MILK.** — For juniors; seniors may elect. A study of the various phases of the market milk industry, sanitary production; transportation; marketing; handling in the city plant; delivery systems; milk and its relation to the public health; inspection; milk laws; food value and advertising. Some milk plants will be visited.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Assistant Professor SMITH and Mr. MACK.

Prerequisite, Dairy 50.

53. **III. ADVANCED JUDGING OF DAIRY PRODUCTS.** — For juniors; seniors may elect. The judging of milk, ice cream, butter and cheese using standard commercial methods and official score cards. A team is chosen from this class to represent the college in dairy products judging contests at the Eastern States Exposition and the National Dairy Show.

2 2-hour laboratory periods, credit, 2.

The DEPARTMENT.

Prerequisite, Dairy 51.

75. **I. MILK PRODUCTS (1927-28).** — For juniors and seniors. The manufacture of milk products other than butter and ice cream, including cheddar cheese, soft and fancy cheese, condensed and powdered milk, casein, commercial butter-milk, etc. Laboratory exercise largely in cheese making and commercial butter-milk manufacture. Given in alternate years.

1 class hour.

1 4-hour laboratory period, credit, 3.

Mr. MACK.

Prerequisite, Dairy 50, previously or in conjunction.

76. **I. ADVANCED TESTING (1926-27).** — For juniors and seniors. Work covers moisture and fat testing for all dairy products; the casein test; salt test for butter; acid tests; work with the Mojonnier apparatus and many other applied chemical tests used in dairy manufacture work. Given in alternate years.

2 4-hour laboratory periods, credit, 4.

Mr. MACK.

Prerequisite, Dairy 50, previously or in conjunction.

77. **II. BUTTER MAKING (1927-28).** — For juniors and seniors. A study of separators and cream separation; handling milk and cream for butter making; preparation of starters, and ripening cream; churning; markets and their requirements; marketing, scoring and judging butter; management; butter making machinery and care thereof; problems. Given in alternate years.
2 class hours. 2 3-hour laboratory periods, credit, 5.

Assistant Professor SMITH.

Prerequisite, Dairying 50.

78. **III. ICE CREAM MAKING (1926-27).** — For juniors and seniors. A study of the principles and practice of ice cream making. Laboratory equipment is modern and the laboratory instruction will cover commercial practices. Some ice cream plants will be visited. Given in alternate years.
2 class hours. 2 3-hour laboratory periods, credit, 5.

Assistant Professor SMITH.

Prerequisite, Dairying 50.

79. **I. SEMINAR.** — For students majoring in dairy manufactures. This course consists of a study of the work accomplished by various experiment stations, also a review of foreign literature. Students will prepare papers on various dairy subjects. Frequent addresses will be made to the class by visiting dairy authorities.
1 class hour. Credit, 1.

Professor FRANDSEN.

80. **III. SEMINAR.** — Continuation of Course 79.
1 class hour.

Credit, 1.

Professor FRANDSEN.

Farm Management.

Professor FOORD, Assistant Professor BARRETT.

The purpose of the courses in this department is to present various considerations of farming as a business. This involves a knowledge of the cost of production and the profit from the different enterprises such as dairy, poultry or orchard; a study of the enterprises, and the relative amounts of each that will give the best use of labor and equipment on the farm under consideration.

The college farm of 250 acres is under the general supervision of the Department of Farm Management, and furnishes demonstration material. It includes improved land, pasture land and a farm woodlot. The improved land illustrates the value of good culture and the best known methods for the maintenance of fertility. The farm is equipped with suitable buildings and good machinery for the work carried on, of which the production of certified milk is an important branch. Several good farms in the vicinity, illustrating types of both special and general agriculture, may be inspected and studied. The offices of the department are in Stockbridge Hall.

Elective Courses.

51. **II. FARM ACCOUNTS AND COST ACCOUNTING.** — For juniors; seniors may elect. A study of farm inventories, single-enterprise accounts, complete farm accounts and farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of the farm.

3 2-hour laboratory periods, credit, 3.

Professor FOORD.

76. **I. FARM MANAGEMENT.** — For seniors; juniors may elect. A study of farming as a business; regions and types of farming; the general principles of farm management and the influence of size, production, live stock and crop farming on the farmer's labor income; arrangement of fields and buildings; use of land, capital and labor; choosing and buying a farm.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FOORD.

Prerequisites, Agronomy 50, Animal Husbandry 25 and 26, and some farm experience.

77. **III. FARM MANAGEMENT.** — For seniors; juniors may elect. A further and more specific study of the principles and practices as outlined in Course 76, with reference to their application to different regions of the United States and especially to New England. Trips to successful farms are a required part of the course.

1 class hour.

1 4-hour laboratory period, credit, 3.
Professors FOORD and BARRETT.

Prerequisites, Farm Management 51 and 76.

78. **II. SEMINAR.** — For seniors majoring in general agriculture; others by arrangement.

1 class hour.

Credit, 1.
Professors FOORD and BARRETT.

79. **III. SEMINAR.** — For seniors majoring in general agriculture; others by arrangement.

1 class hour.

Credit, 1.
Professors FOORD and BARRETT.

Poultry Husbandry.

Professor GRAHAM, Professor SANCTUARY, Assistant Professor BANTA, Miss PULLEY.

The introductory courses (50, 51, 52) give a knowledge of the general routine of elementary poultry keeping. The advanced or senior courses prepare men for the successful operation of poultry plants, either as owners or managers, for graduate work, for teaching, extension or investigational work.

The poultry plant consists of 8 acres of land. The buildings consist of incubator cellars equipped with a number of lamp incubators and four mammoth machines with a total capacity of 11,000 eggs, a new 72 foot brooder house and about 40 colony brooder houses and growing coops having a capacity for 7,000 chicks. The brooder houses are equipped with a great variety of brooder stoves and other necessary equipment for brooding and growing chicks.

A large number of laying and breeding houses furnish quarters for nearly 2,000 laying birds and ample facilities for student practice work in pen management, culling, judging, and pedigree work. Laboratories at the plant and Stockbridge Hall are used for practicums in killing, picking, drawing, trussing, packing, grading, fattening, and poultry carpentry and other necessary practices that have to do with poultry keeping.

In addition to furnishing laboratory facilities, the college plant and the Experiment Station farm present live problems bearing either directly or indirectly upon commercial poultry keeping and data from these are available for student use. Our experimental breeding plant being an integral part of our department organization is an asset of untold value.

Elective Courses.

50. **I. POULTRY JUDGING.** — For juniors; seniors may elect. A study of the origin and evolution of our standard breeds and varieties of domestic fowl, judging production quality, using trapnested birds, judging exhibition quality by score card and comparison. One or more poultry farms, an egg-laying contest and a poultry show will be visited. Poultry judging teams competing in the Inter-collegiate contest at Madison Square Garden each January are trained in this course.

2 class hours.

2 3-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

51. **II. POULTRY FEEDS AND FEEDING.** — For juniors; seniors may elect. A study of the common feeds and the scientific principles underlying the field of nutrition. Recent experimental work and current feeding problems will receive special consideration. For observational practice and accumulation of original data, the management of a pen of birds will be required for a period of a few weeks.

3 class hours.

2 2-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

52. **III. INCUBATION AND BROODING.** — For juniors; seniors may elect. A study of the fundamental principles underlying incubation and brooding practices. The science of physics and general biology are applied to the study of incubation and brooding processes. Students become thoroughly acquainted with modern incubation and brooding equipment through detailed study and operation of typical incubators and brooders. Present day problems are considered and some are investigated as a part of the class work.
2 class hours.

3 2-hour laboratory periods, credit, 5.
Professor SANCTUARY and Miss PULLEY.

75. **I. POULTRY HOUSING AND SANITATION.** — For seniors. A consideration of the biological needs of poultry from the standpoint of housing, the economic principles governing designing and construction of poultry houses and equipment for poultry farm buildings. The course also embodies a study of the principles of poultry sanitation including external parasites and the insecticidal agents for their control.
3 class hours.

Credit, 3.
Assistant Professor BANTA.

76. **I. MARKET POULTRY AND POULTRY PRODUCTS.** — For seniors. A study of market classes of poultry and eggs; preparation of poultry products for market; requirements of different markets; methods of marketing involving a study of distribution, finances and business organizations; cold storage and transportation; advertising, prices and food values. Laboratory exercises in candling, packing, killing, dressing and similar operations to make the above named factors more concrete. Students are required to fatten pens of chickens by different methods and rations, keeping accurate data of the gains in weight and quality, also the costs of feed and labor, and resultant profit or loss. Competitive judging of the exhibits in the Annual Market Poultry Show, staged by the members of this class, is a feature of the course. When possible, a short trip to Springfield is arranged to study cold storage plants and the handling of poultry products in the local market.
2 class hours.

2 2-hour laboratory periods, credit, 4.
Miss PULLEY.

77. **II. POULTRY BREEDING.** — For seniors. Methods of selection and improvement of poultry are developed through study of the principles of heredity. Most of the course centers around the progeny test and pedigree method of breeding. Students taking this course participate in the college plant selection in pedigree work. Three breeds of poultry each pedigreed for from seven to twenty years furnish practice materials.
4 class hours.

1 2-hour laboratory period, credit, 5.
Professor SANCTUARY.

78. **III. FARM POULTRY.** — For seniors; juniors may elect. For those students who desire a general knowledge of poultry husbandry but who cannot devote more than one term to the subject; it is not intended for students specializing in poultry, and such students are admitted only by special permission. Emphasis is placed on the farm flock and its economic management. Utility classification, housing, culling, feeding, hatching, rearing, production, marketing and disease control receive special consideration.
3 class hours.

2 2-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

79. **III. POULTRY FARM ORGANIZATION.** — For seniors. This course embodies the application of economic and business principles to poultry farming. The place and importance of the various branches of well organized poultry farms and their relation to each other receive special consideration; also the study of surveys and production costs. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit.
3 class hours.

1 2-hour laboratory period, credit, 4.
Professor GRAHAM.

Prerequisite, Poultry 77.

DIVISION OF HORTICULTURE.

Professor WAUGH.

[Heavy-faced Roman numerals indicate the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Floriculture.

Professor THAYER, Assistant Professor MULLER.

The courses in floriculture are intended to present a general knowledge of all phases of greenhouse design, construction, heating and management, the culture of florists' crops (under glass and in the field), floral decoration and arrangement. The department aims to train students so that they may take up commercial floriculture (either in the growing or retail business) and the management of conservatories on private estates, in parks and cemeteries.

The department is especially well equipped for the teaching work. French Hall, with its laboratories, classrooms and offices, furnishes excellent facilities for the purposes of instruction. The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall range of 7,200 square feet, a durable, practical, commercial range composed of palm and fern, sweet pea, carnation, rose and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet, suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has 2 acres of land used for the summer culture of carnations, galdioli, dahlias, sweet peas, bedding plants, etc. This also includes a small garden devoted to the culture of annuals. A large collection of biennials and herbaceous perennials is maintained and is being enlarged from year to year; at present the collection consists of several hundred species and varieties, and provides an excellent opportunity for the study of garden flowers. A small rose garden is to be planted in the near future.

Elective Courses.

50. **I. GREENHOUSE MANAGEMENT.** — For juniors; seniors may elect. Designed to familiarize students with the methods followed in the management of greenhouses and of greenhouse crops and the principles underlying the same; history and development of the floricultural industry; preparation of soils; fertilizers; potting; watering; ventilation; control of insects and diseases; methods of plant propagation; forcing of plants. At some time during the term the members of the class will be required to take a one-day trip to visit large commercial establishments. Lectures, assigned readings, reports and laboratory practice.
2 class hours. 2 2-hour laboratory periods, credit, 4.

Assistant Professor MULLER.

Prerequisite, Horticulture 25, 26 and 27.

51. **II. GREENHOUSE MANAGEMENT.** — For juniors; seniors may elect. Continuation of Course 50. Several field trips, to study floricultural establishments in the vicinity, will be made during the laboratory periods.
2 class hours. 1 4-hour laboratory period, credit, 4.

Assistant Professor MULLER.

52. **III. FLORAL ARRANGEMENT.** — For juniors; seniors may elect. A study of the principles underlying the arrangement and use of cut flowers and plants; funeral designs, basket and vase arrangement, table decorations, home, church and all interior decorations; a study of color as applied to such work. Lectures, assigned readings and reports. This course will be limited to ten students.
2 class hours. 2 2-hour laboratory periods, credit, 4.

Professor THAYER.

Part II.

49

53. I. GREENHOUSE CONSTRUCTION AND HEATING. — For juniors; seniors may elect. The location, types, arrangement, construction, cost, equipment, heating and ventilating of greenhouse structures; the drawing of plans and study of specifications for commercial houses and conservatory ranges. Such practical work as glazing and the construction of concrete benches and cold frames is included as facilities allow. Lectures, assigned readings and problems.

3 class hours.

1 2-hour laboratory period, credit, 4.

Professor THAYER.

55. III. GARDEN FLOWERS AND BEDDING PLANTS. — For juniors and seniors. A study of the annuals, biennials, herbaceous perennials, bulbs, bedding plants and roses that are valuable for use in floricultural or landscape gardening work. Methods of propagation, culture and uses of the various plants are considered; identification of material. Lectures, assigned readings and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors THAYER and MULLER.

75. I. COMMERCIAL FLORICULTURE. — For seniors. A detailed study of the important commercial cut flower crops and potted plants. Visits will be made to commercial establishments during the term. The lectures are supplemented with textbooks and assigned readings.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

Prerequisite, Floriculture 51.

76. II. COMMERCIAL FLORICULTURE. — For seniors. As stated under Course 75.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

Prerequisite, Floriculture 75.

77. III. COMMERCIAL FLORICULTURE. — For seniors. As stated under Course 75.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor MULLER.

Prerequisite, Floriculture 76.

79. II. CONSERVATORY PLANTS. — For seniors. A study of the foliage and flowering plants used in conservatory work; methods of propagation, culture, use and arrangement; identification of plants. Lectures, assigned readings and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

80. III. SEMINAR. — For seniors majoring in floriculture. Advanced study of subjects pertaining to some phase of floriculture. All students are assigned specific problems and pursue study in these problems by reading and research; the results of this study must be presented in the form of a thesis. Seminars are conducted weekly.

1 class hour.

2 to 4 laboratory hours, not to exceed 3 credits.

Professor THAYER.

Forestry.

Professor GROSE.

The forestry courses are intended primarily for prospective owners or managers of farm woodlots, and the field work is focused on typical New England problems. These courses are broad enough, however, to furnish valuable preparation for students planning to study forestry in graduate schools.

The department has an unusually complete equipment of the various instruments used in forest mensuration, forest mapping and engineering, timber estimating, log scaling, board measuring, etc.; and a large assortment of boards illustrative of the various commercial woods found in the lumber markets. The State Forest Nursery, comprising 14 acres of land and containing, approximately, 10,000,000 trees, transplants and seedlings, is on the college farm. Forests containing every variety of tree common to New England are within walking distance of the college. The college campus affords an arboretum containing a large number of trees not native to New England. The Mount Toby Demonstration Forest has an area of approximately 750 acres, and contains the various types of forest growth found throughout the State. It serves as a field laboratory in which students have the privilege of working out problems in silviculture, forest mensuration and management. Improvement cuttings, cuttings for utilization, and forest plantings are conducted by the department.

55. I. WOODLOT FORESTRY: ESTIMATING AND BUSINESS MANAGEMENT. — For juniors and seniors. Topics: forest mapping; timber-cruising; determining rate of growth and possible cut; financial returns; forest taxation; our national timber supply, present and future.

1 2-hour and 1 4-hour laboratory period, credit, 3.
Professor GROSE.

56. II. WOODLOT FORESTRY: LOGGING, MILLING AND MARKETING. — For juniors and seniors. Topics: felling trees; sawing logs; hauling logs; the portable mill; the stationary mill; seasoning, measuring and shipping lumber; lumber grades and prices; legal forms; by-products of the woodlot; adaptability of species to uses; wood-using industries of Massachusetts.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GROSE.

Prerequisite, Forestry 55.

57. III. WOODLOT FORESTRY: TIMBER-RAISING. — For juniors and seniors. Topics: forest planting; weeding; release cuttings; pruning; thinning; salvage cutting; protection from insects, fungi, fire, etc.; final cutting methods for natural reproduction of the forest.

1 2-hour and 1 4-hour laboratory period, credit, 3.
Professor GROSE.

58. III. WOODLOT FORESTRY: BRIEF SURVEY. — For juniors and seniors. A condensation of Courses 55, 56 and 57 for those who have only one term to give to forestry.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GROSE.

Horticultural Manufactures.

Professor CHENOWETH, Mr. ROBERTSON.

The courses aim to give a practical knowledge of the problems connected with food preservation. Emphasis is placed upon the conservation of the cheaper grades of fruits and vegetables, to the end that the whole crop may be marketed at a profit and that wholesome food products may result from what would otherwise be lost. The social and economic values of this work are constantly emphasized.

The department occupies three laboratory rooms in Flint Laboratory, two in Fisher Laboratory, with offices in Wilder Hall and French Hall. The general equipment of the department, both for the use of students and for manufacturing purposes, may be grouped under the following heads: —

1. *Canning.* — A modern canning outfit, including both steam-pressure cookers and hot-water baths, hand and power can sealers, peeling and slicing machines, a string bean cutter, heat-penetration thermometers, electric incubator and a large assortment of all types of home canning equipment.

2. *Evaporation.*—Two small orchard evaporators, a tunnel drier, peeling machines, slicers and a general assortment of driers adapted to home evaporation.

3. *Fruit Juices, Butters, etc.*—A hand cider mill, a motor-driven hydraulic press, a steam-jacketed kettle, an apple-butter cooker, and cider and vinegar testing apparatus.

Elective Courses.

75. **I. HORTICULTURAL MANUFACTURES.**—For seniors and graduate students. A practical course in food preservation dealing primarily with fruits and vegetables. The canning of fruits and vegetables as practiced in the home and in commercial canneries; evaporation of fruits and vegetables, the various types of equipment and methods of preparation of products. The manufacture of (a) fruit products, such as butters, jams, jellies, fruit juices, marmalades, preserves, vinegars, pastes, etc.; (b) vegetable products, as pickles, piccalilli, sauerkraut, soups, etc. Particular attention is given to study and use of all types of equipment suitable for use in the home or small factory, together with methods for testing a large variety of manufactured products. The emphasis is on canning, drying and study of equipment.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor CHENOWETH.

76. **II. HORTICULTURAL MANUFACTURES.**—For seniors and graduate students. A continuation of Course 75. The emphasis in this course is placed on the manufacturing and testing of fruit and vegetable products.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 75.

77. **III. HORTICULTURAL MANUFACTURES.**—For seniors and graduate students. Continuation of courses 75 and 76, dealing primarily with maple products, the canning of meats and spring vegetables, and studies of special problems involved in establishing and operating home and farm factories.

2 2-hour laboratory periods, credit, 2.

Professor CHENOWETH.

78. **III. HORTICULTURAL MANUFACTURES.**—For seniors and graduate students. A general course in food preservation, including lectures, readings and laboratory work in the canning and evaporation of fruits and vegetables, the manufacture of fruit and vegetable products. Special emphasis will be given to the conservation of the low-grade fruits and vegetables in the home and in the farm factory.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor CHENOWETH.

80. **I. HORTICULTURAL MANUFACTURES.**—For senior women. A course dealing with the problems of food preservation in the home. Application of present-day knowledge to the practices of canning, pickling, drying and the manufacture of fruit and vegetable products in the home.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor CHENOWETH and Mr. ROBERTSON.

81. **II. HORTICULTURAL MANUFACTURES.**—For senior women. A continuation of Course 80. The emphasis will be placed on methods of preserving the small fruits, home storage of fruits and vegetables, the preservation of foods with salt and the manufacture of a variety of vegetable pickles, the manufacture of fruit syrups and their blending to form fruit beverages, the manufacture of fruit candies and candied fruits.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Horticulture.

Professor WAUGH, Professor THOMPSON, Assistant Professor DRAIN, Mr. FRENCH.

The general subject of horticulture divides naturally into subjects of pomology, floriculture, forestry, landscape gardening and vegetable gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.

Required Courses.

25. **I. RELATIONSHIPS AND ASSOCIATIONS OF HORTICULTURAL PLANTS.** — For sophomores. A study of the outstanding characters utilized in acquiring a practical knowledge of the principal species and varieties of cultivated plants; together with a consideration of those principles which determine the natural associations of plants in so far as they bear on the best methods of plant culture.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Professor THOMPSON.

26. **II. HORTICULTURAL PRACTICES.** — For sophomores. This course is designed to demonstrate and explain the principles underlying the practical cultivation of economic plants. Consideration will be given to the methods of propagation and to the culture of plants in their relation to soils, tillage, water and food supply, etc.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Assistant Professor DRAIN.

27. **III. BREEDING OF HORTICULTURAL PLANTS.** — For sophomores. A study of the principles of inheritance as applied to plants; together with a consideration of the methods used and problems involved in the improvement of horticultural crops.

5 class hours.

Credit, 5.

Mr. FRENCH.

Elective Courses (General).

50. **I. PLANT MATERIALS.** — For juniors; seniors may elect. Aims to make the student familiar with the distinguishing characters of trees, shrubs and woody vines used in ornamental plantings; together with the propagation and care of the same.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor THOMPSON.

51. **III. PLANT MATERIALS.** — For juniors; seniors may elect. A continuation of Course 50, taking up the field uses of trees, shrubs and woody climbers, their natural habitats, soils and plant associations, with a view to supplying to the students in landscape gardening and floriculture a knowledge of the species and varieties used in ornamental planting. Frequent practicums and field excursions.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor THOMPSON.

Prerequisite, Horticulture 50.

75. **III. HORTICULTURE REVIEW.** — Required of all seniors majoring in the Division of Horticulture. Designed to correlate the various branches of plant science and horticultural practice.

1 lecture hour, 1 conference period.

Credit, 2.

Professor WAUGH.

Landscape Gardening.

Professor WAUGH, Assistant Professor HARRISON, Assistant Professor QUINLAN.

The purposes of the courses are: (1) To train men for the profession in all its branches. As a rule graduates should first enter the employ of established landscape architects, nurserymen or park superintendents, and after an apprenticeship

of several years those who have the requisite technical and business ability may set up for themselves. (2) To train men for public-service work in national, State and municipal parks and forests. (3) To train men for country planning, this function being exercised through various public institutions and organizations. (4) To train teachers and extension workers in lines of landscape gardening and civic improvement. (5) To give a broad and liberal general education stressing the fundamental principles of art.

The department has large, well-lighted drafting rooms, with necessary equipment, such as planimeters, eidograph, pantograph, blueprinting outfit, etc.; and a complete outfit of surveying instruments, including transits, levels, plane tables, prismatic compasses, hand levels, etc. The college campus presents an unusually good collection of the plant materials used in landscape gardening.

DRAWING.

Required Courses.

25. **I. FREE-HAND DRAWING.** — For sophomores; juniors and seniors may elect. Lettering; free-hand perspective; sketching from type models, leaves, flowers and trees, houses, etc.; laying flat and graded washes in water colors; water-color rendering of leaves, flowers and trees.

4 2-hour laboratory periods, credit, 4.
Assistant Professor QUINLAN.

26. **II. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. Inking exercises; geometric problems; projection; intersections; isometric; shades and shadows; parallel; angular and oblique perspective; perspective drawing of buildings. Students should have preparation in plane and solid geometry.

3 2-hour laboratory periods, credit, 3.
Assistant Professor QUINLAN.

27. **III. TOPOGRAPHICAL DRAWING.** — For sophomores; juniors and seniors may elect. Conventional signs and mapping in ink; conventional coloring and map rendering in water colors.

4 2-hour laboratory periods, credit, 4.
Assistant Professor QUINLAN.

Prerequisite, Drawing 26.

30. **I. ELEMENTARY DESIGN.** — For sophomore women. Offered for the year 1926-27.

3 2-hour laboratory periods, credit, 3.
Assistant Professor QUINLAN.

LANDSCAPE GARDENING.

Elective Courses.

50. **I. MAPPING AND TOPOGRAPHY.** — For juniors. Reconnaissance surveys and mapping, with special reference to the methods used in landscape gardening. Must be followed by Course 51.

2 2-hour laboratory periods; 2 3-hour laboratory periods, credit, 5.
Assistant Professor HARRISON.

Prerequisites, Mathematics 26 and 27, Drawing 25, 26 and 27.

51. **II. ELEMENTS OF LANDSCAPE GARDENING.** — For juniors. Detailed study of selected designs of leading landscape gardeners; grade design, road design, etc.

3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

Prerequisite, Landscape Gardening 50.

52. **III. GENERAL DESIGN.** — For juniors. Field notes; examination of completed works and those under construction; design of architectural details; written reports on individual problems.

2 2-hour laboratory periods; 2 3-hour laboratory periods, credit, 5.

Assistant Professor HARRISON.

Prerequisites, Landscape Gardening 50 and 51, and either plant materials (Horticulture 50 and 51) or advanced mathematics.

75. **I. THEORY OF LANDSCAPE ART.** — For seniors and graduates. The general theory and applications of landscape study, including a brief history of the art. 3 class hours.

Credit, 3.

Professor WAUGH.

76. **I. CIVIC ART.** — For seniors. The principles and applications of modern civic art, including city planning, city improvement, village improvement and rural improvement, with special emphasis upon country planning. Must be followed by Course 77.

3 3-hour laboratory periods, credit, 4.

Assistant Professor QUINLAN.

Prerequisite, Landscape Gardening 52.

77. **III. COUNTRY PLANNING.** — For seniors. As stated under Course 76.

3 3-hour laboratory periods, credit, 4.

Professor WAUGH.

Prerequisite, Landscape Gardening 76.

78. **I. ARCHITECTURE (1926-27).** — Alternates with Course 79. For juniors and seniors. The history of architectural development, the different historic types, with special reference to the underlying principles of construction and design and their relations to landscape design. Illustrated lectures, field trips, study of details including preparation of plates. 3 class hours.

Credit, 3.

Assistant Professor HARRISON.

79. **I. CONSTRUCTION AND MAINTENANCE (1927-28).** — Alternates with Course 78. For juniors and seniors. Detailed instruction in methods of construction and planting in carrying out plans, in organization, reporting, accounting, estimating, etc.; maintenance work in parks and on estates, its organization, management, cost, etc. 3 class hours.

Credit, 3.

Assistant Professor HARRISON.

80. **II. THEORY OF DESIGN.** — For seniors. Lectures; exercises in pure design in two and three dimensions; conventional designs; modeling.

3 3-hour laboratory periods, credit, 4.

Professor WAUGH.

Prerequisite, Landscape Gardening 52.

81. **II. ESTATE DESIGN.** — For seniors. Grading and planting plans; garden designs and planting.

3 3-hour laboratory periods, credit, 4.

Assistant Professor HARRISON.

82. **III. PARK DESIGN.** — For seniors.

3 3-hour laboratory periods, credit, 4.

Assistant Professor HARRISON.

Pomology.

Professor SEARS, Professor VAN METER, Assistant Professor DRAIN, Mr. FRENCH, Mr. ROBERTS.

The object of the course is to give a training which shall be thoroughly practical and yet scientific. This should fit men to enter the field of practical fruit growing, or it will furnish an excellent foundation for further study.

The department has 50 acres in fruit plantations. The apple orchards comprise about 35 acres, and there are blocks of pears, peaches, plums and cherries. In small fruits there are plantings of strawberries, raspberries, blackberries, currants and blueberries. There are four vineyards, with a total area of 5 acres, in which the leading varieties and the principal types of pruning and training are represented. In these plantations are 50 varieties of grapes, representing three native American species and many hybrids; 20 varieties of peaches; 20 varieties of pears; 25 of plums, including five species and many hybrids; and 100 varieties of apples.

The department has an excellent equipment of spraying and dusting machinery, including various styles and sizes of power sprayers, and many types of barrel pumps and smaller sprayers. There is also an excellent assortment of orchard tools, including a tractor, plows, harrows, fertilizer sowers, etc.

Fisher Laboratory is one of the best planned and equipped packing and storage houses in the United States. It includes six refrigerated rooms; four storage rooms not refrigerated; one large laboratory room and one classroom, besides ample storage room for fruit packages and equipment. The equipment for the building itself includes four types of apple sizers; packing tables and box and barrel presses of various types, besides all kinds of packages and the smaller equipment necessary for thoroughly modern work in grading and packing fruit. The department is equipped with lockers and with pruning and other tools for the use of students in laboratory work, which is made a leading feature in all the courses in pomology.

Elective Courses.

50. I. PRACTICAL POMOLOGY. — For juniors; seniors may elect. A study of the general principles of the growing of fruits, dealing with such questions as selection of site, soils, windbreaks, laying out plantations, choice of nursery stock, pruning, culture of orchards, orchard fertilizers, cropping orchards, etc. Textbooks, lectures, and reference books; field and laboratory exercises.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. ROBERTS.

Prerequisite, Horticulture 27.

51. II. PRACTICAL POMOLOGY. — For juniors; seniors may elect. As stated under Course 50.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. ROBERTS.

Prerequisite, Pomology 50.

52. III. SMALL FRUITS. — For juniors; seniors may elect. A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries and grapes, dealing with such questions as their propagation, selecting a site for the plantation, soils, fertilizers, pruning, harvesting, marketing, etc.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. ROBERTS.

Prerequisite, Horticulture 27.

54. II. SYSTEMATIC POMOLOGY. — For juniors; seniors may elect. A study of varieties of fruits including identification, nomenclature, relationships and classification. This course is advised but not required of candidates for the varsity fruit judging team. Lectures, textbooks, laboratory and field exercises.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor DRAIN.

Prerequisite, Horticulture 27.

75. **I. SYSTEMATIC POMOLOGY.** — For seniors. A continuation of Course 54, with special reference to nursery variety certification, variety study of pears, grapes, plums, cherries, strawberries, raspberries, blueberries and blackberries.
1 class hour. 2 2-hour laboratory periods, credit, 3.

Assistant Professor DRAIN.

Prerequisite, Pomology 54.

76. **II. ORCHARD MANAGEMENT.** — For seniors. This course will consider the more important problems in connection with the organization and management of a fruit farm. Specialization and diversification and the place of each of the common fruit crops on the farms of Massachusetts will be studied in relation to the distribution of labor and income. The combination of fruit growing with other lines of farming will be discussed in connection with conditions in this State and combinations in successful operation will be studied. The course is intended to bring principles learned in the previous years in college to bear upon the particular problems of the fruit grower.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor VAN METER.

Prerequisite, Pomology 51.

77. **I. COMMERCIAL POMOLOGY.** — For seniors. The picking, handling, storing and marketing of fruits, including a discussion of storage houses, fruit packages, methods of grading and packing. Especial emphasis is placed upon laboratory and field work, where the student is given actual practice in the picking and packing of most of the principal fruits.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Mr. ROBERTS.

Prerequisite, Pomology 51.

78. **III. SPRAYING.** — For seniors. A study of (a) spraying materials, their composition, manufacture and preparation for use; the desirable and objectionable qualities of each material, formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard. Spray materials are prepared, spraying apparatus is examined and tested, old pumps are overhauled and repaired, and the actual spraying is done in the college orchards and small-fruit plantations.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor DRAIN.

Prerequisite, Pomology 51 or 79.

79. **II. GENERAL POMOLOGY.** — For seniors; juniors may elect. Planned to meet the needs of students who cannot devote more than one term to the subject but who want a general knowledge of fruit growing. Consists of lectures and laboratory exercises on such topics as choosing the locations, kinds and varieties of fruits to grow, securing and setting the plants, care and cultivation, pruning, spraying, pests, harvesting and storing.

2 class hours.

1 2-hour laboratory period, credit, 3.

Mr. FRENCH.

80. **I. SEMINAR.** — For seniors majoring in pomology. Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

81. **II. SEMINAR.** — For seniors majoring in pomology. A continuation of Course 80. One seminar meeting each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

82. **III. SEMINAR.** — For seniors majoring in pomology. A continuation of Course 81. One seminar meeting each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

Vegetable Gardening.

Professor WAUGH, Assistant Professor SNYDER and Mr. STOUT.

The courses in Vegetable Gardening are designed for students who wish to enter commercial vegetable growing, the seed business, or professional work, such as teaching or experimental work. Each of these fields offers wide possibilities and the advancement of vegetable production will depend upon the number and quality of the men trained along these lines.

The department has ten acres of land, 3,800 sq. ft. of greenhouse space, and 150 hotbed sash, all of which are used to provide laboratory facilities. Part of this equipment is used for the non-commercial laboratory work, such as the students' gardens and the type and variety garden, while the remainder is devoted to commercial laboratory work.

In addition the department maintains at Waltham, Massachusetts, the Market Garden Field Station. Here the experimental and extension work of the department is carried on.

Elective Courses.

50. **III. GENERAL VEGETABLE GARDENING.** — For juniors; seniors may elect. A general course for those students who desire a general knowledge of agriculture, but do not care to spend the time for extreme specialization. Designed to teach the fundamentals of vegetable growing so they may be applied (1) to the growing of vegetables commercially as a cash crop with other types of agriculture, (2) to the growing of vegetables in the home garden, (3) to agricultural teaching in secondary schools, and (4) to professional agricultural work other than teaching.
3 class hours. 2 2-hour laboratory periods, credit, 5.

52. **II. PRACTICAL VEGETABLE GARDENING.** — For juniors; seniors may elect. Courses 52 and 53 are designed for those students who wish to obtain a knowledge of vegetable growing in order that they may apply this to the successful commercial production of vegetables, or to become fitted for professional work such as teaching and research work. The course begins with a consideration of vegetables as a food, the part they play in the food supply of the city, State, or nation, and Massachusetts' part in this type of food production, followed by a study of the fundamentals of vegetable gardening. Deals with such questions as the selection of a location; soils, manures and fertilizers, green manures and cover crops; seeds and seeding; planting, tillage, irrigation; control of insects and diseases. Includes a detailed study of the cultural requirements of the common vegetable crops, and the principles of rotation and double cropping. Text and reference books. Laboratory and field exercises.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisites, Horticulture 26, Agronomy 75.

53. **III. PRACTICAL VEGETABLE GARDENING.** — For juniors; seniors may elect. As stated under Course 52.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 52.

75. **I. TYPES AND VARIETIES.** — For seniors. Includes the systematic study of types, varieties and strains of the leading vegetable crops; exhibiting and judging of vegetables; determination of quality in vegetables; seed growing, variety improvement, roguing, seed harvesting, curing and storing.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

76. **II. VEGETABLE FORCING.** — For seniors. A study of types, materials, construction, location, arrangement, capacity and cost of greenhouses for growing vegetables. A brief consideration of the heating plant, — the type, installation, piping and management; also the study of greenhouse vegetable crops and their production as practiced by commercial growers.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

77. **III. COMMERCIAL VEGETABLE GROWING.** — For seniors. A consideration of vegetable growing as a business. A study of this specialized type of farming, including places where developed, types, extent, economic importance, capitalization, equipment and other fundamental problems of commercial vegetable gardening. Students assist in the planning and operation of a typical market-gardening area. Visits are made to market-gardening and truck-gardening farms.
3 class hours. 2 2-hour laboratory periods, credit, 5.

Prerequisite, Vegetable Gardening 53 or 50.

DIVISION OF SCIENCE.

Professor GORDON.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Botany.

Professor OSMUN, Assistant Professor CLARK, Assistant Professor McLAUGHLIN, Assistant Professor TORREY,
Assistant Professor DAVIS.

A knowledge of the principles of plant life is fundamental in agricultural education. The required courses in botany are planned with this and the general educational value of the subject in view. Elective courses are of two types: (1) those which have for their chief aim the direct support of technical courses in agriculture and horticulture, and (2) those providing broader, more intensive training in the science. Courses in the second group may lead, when followed by postgraduate study, to specialization in the field. They also furnish excellent training for those specializing in other sciences and in scientific agriculture. In all undergraduate courses the relation of the science of botany to agriculture is emphasized.

The department occupies Clark Hall, a brick building 55 by 95 feet, two stories high, with basement and attic. The building has two lecture rooms with seating capacity of 154 and 72, respectively; one seminar and herbarium room; large laboratories for general and special work; and smaller rooms for advanced students. A glass-enclosed laboratory for plant physiology adjoins the main building and provides unusual facilities for the study of phenomena of plant life. In addition, a greenhouse 28 by 70 feet is connected with the building. This is for experimental work in plant pathology and physiology, and for growing plants needed for instruction. The experiment station laboratories devoted to botanical research are in this building.

The laboratories and lecture rooms are of modern construction, finely lighted and equipped with compound and dissecting microscopes, microtomes, paraffine and drying ovens, physiological and other apparatus, and a large collection of charts. The herbarium contains about 20,000 sheets of seed plants and ferns,

1,200 sheets of liverworts and mosses, and 25,000 specimens of fungi. Facilities and equipment for the study of plant physiology and pathology are excelled in few other institutions.

Required Courses.

3. **III. INTRODUCTORY BOTANY.** — For freshmen. Presents the seed plants as plastic organisms molded by their environment. Also introduces the student to methods of identifying and classifying plants.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professor TORREY.

25. **II. INTRODUCTORY BOTANY.** — For sophomores. The anatomy and physiology of the seed plants (Phanerogamia).

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor TORREY.

Prerequisite, Botany 3.

26. **III. MORPHOLOGY AND TAXONOMY OF THE LOWER PLANTS (CRYPTOGAMIA).** — For sophomores. Systematic study of typical forms of bacteria, algæ, fungi, lichens, mosses, ferns. (Courses 3, 25 and 26 constitute a general elementary course in botany, and are required of all students who major in science.)

1 class hour.

3 2-hour laboratory periods, credit, 4.

Professors OSMUN and McLAUGHLIN.

Prerequisite, Botany 25.

Elective Courses.

50. **I. DISEASES OF CROPS.** — For juniors; seniors may elect. The lectures are general and are taken by all who elect the course, but in order to permit students to specialize on the diseases of crops most closely related to their majors or in which they are most interested, the course is divided for lecture and laboratory work into the following sections: (I) diseases of truck and field crops; (II) diseases of floricultural crops and ornamentals; (III) diseases of fruit crops; (IV) diseases of shade and forest trees. One, two or three laboratory sections may be taken.

1, 2 or 3 class hours.

1, 2 or 3 2-hour laboratory periods, credits, 2, 4 or 6.

Assistant Professor McLAUGHLIN.

Prerequisites, Botany 3 and 25.

51. **II. DISEASES OF CROPS.** — For juniors; seniors may elect. As stated under Course 50.

1, 2 or 3 class hours.

1, 2 or 3 2-hour laboratory periods, credits, 2, 4 or 6.

Assistant Professor McLAUGHLIN.

Prerequisite, Botany 50.

52. **I. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; study of system of classification; collateral reading. A prerequisite of the senior course in plant pathology, but open to all.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor DAVIS.

Prerequisite, Botany 26.

53. **II. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. As stated under Course 52.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor DAVIS.

Prerequisite, Botany 52.

54. **III. SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. As stated under Course 52.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

Prerequisite, Botany 53.

55. **III. PLANT HISTOLOGY.** — For juniors; seniors may elect. Comparative study of the tissue of plants; training in histological methods, including the use of precision microtomes, methods of killing, fixing, sectioning, staining and mounting; collateral reading and conferences. This course offers valuable training in preparation for further work in botany.

5 2-hour laboratory periods, credit, 5.

Assistant Professors McLAUGHLIN, TORREY and DAVIS.

Prerequisite, Botany 3 and 25.

58. **I. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. An intensive study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study. Alternates with Course 61.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

59. **II. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. As stated under Course 58. Alternates with Course 62.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

60. **III. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1926-27).** — For juniors and seniors. As stated under Course 58. Alternates with Course 63.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

61. **I. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1927-28).** — For juniors and seniors. In the lectures an intensive study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides. Alternates with Course 58.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

62. **II. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1927-28).** — For juniors and seniors. As stated under Course 61. Alternates with Course 59.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

63. **III. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1927-28).** — For juniors and seniors. As stated under Course 61. Alternates with Course 60.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

75. **I. PLANT PATHOLOGY.** — For seniors. Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station and college work.

1 class hour.

4 2-hour laboratory periods, credit, 5.
Professors OSMUN and DAVIS.

Prerequisite, Botany 54.

76. II. PLANT PATHOLOGY. — For seniors. As stated under Course 75.
 1 class hour. 4 2-hour laboratory periods, credit, 5.
 Professors OSMUN and DAVIS.

Prerequisite, Botany 75.

77. III. PLANT PATHOLOGY. — For seniors. As stated under Course 75.
 1 class hour. 4 2-hour laboratory periods, credit, 5.
 Professors OSMUN and DAVIS.

Prerequisite, Botany 76.

78. I. PLANT PHYSIOLOGY. — For seniors. Study of the factors and conditions of (a) Plant Nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) Plant Growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) Plant Movements, including those due to the taking up of water, and those movements of both motile and fixed forms in response to external stimuli. Weekly conferences are held at which students report on assignments to original sources in the literature.
 2 class hours. 3 2-hour laboratory periods, credit, 5.
 Assistant Professor CLARK.

Prerequisites, Botany 26 and Chemistry 51.

79. II. PLANT PHYSIOLOGY. — For seniors. As stated under Course 78.
 2 class hours. 1 or 3 2-hour laboratory periods, credit, 3 or 5.
 Assistant Professor CLARK.

Prerequisite, Botany 78 for the 5-credit course, Botany 25 for the 3-credit course.

80. III. PLANT PHYSIOLOGY. — For seniors. As stated under Course 78.
 2 class hours. 1 or 3 2-hour laboratory periods, credit, 3 or 5.
 Assistant Professor CLARK.

Prerequisite, Botany 79.

General and Agricultural Chemistry.

Professor LINDSEY, Professor CHAMBERLAIN, Professor PETERS, Assistant Professor SEREX, Dr. BUTLER.

In teaching the courses in chemistry, emphasis is laid on both their educational and their vocational value. The courses in the freshman year deal with fundamental principles, and give the student such an understanding of the subject as will enable him to apply it in farm practice. The more advanced courses, including quantitative analysis, organic, physiological and physical chemistry, are for those who intend to become teachers and workers in the allied sciences, or who desire to follow agricultural chemistry as a vocation. Advanced training is given by means of postgraduate courses (see Graduate School).

Those completing the undergraduate courses are fitted for positions in the agricultural industries, — fertilizer, feed and insecticide manufacture, — as well as in other lines of industry, and in the State experiment stations, in commercial laboratories, and in high school teaching. Postgraduate students are prepared for positions as teachers in colleges, and for more advanced positions in industry and in the experiment stations.

The new Goessmann Chemistry Laboratory was opened for classes in September, 1924.

Required Courses.

The freshman work consists of two distinct parts: Courses 1 and 2 contain more hours and are for those who have not had chemistry in the secondary schools, and Courses 4 and 5 are for those who have presented chemistry for entrance. Both groups of courses bring the student out at the same point. It is obviously to the advantage of the student to take a course in chemistry in high school and thus obviate the extra hours of Courses 1 and 2 in the freshman year.

1. **I. GENERAL CHEMISTRY.** — For freshmen. This course is for those students who do not present chemistry for entrance and who begin the subject in college. It presents an introduction to the fundamental chemical laws, together with a study of the typical acid- and base-forming elements and their compounds.
3 class hours.

2 2-hour laboratory periods, credit, 5.
Dr. BUTLER.

2. **II. AGRICULTURAL CHEMISTRY.** — For freshmen. A continuation of Course I. A study of the common elements. Special emphasis is placed on the application of the fundamental chemical laws particularly in connection with agriculture and every-day life. Substances important in agriculture, such as superphosphate, ammonium sulfate, muriate and sulfate of potash, Paris green, arsenate of lead, Bordeaux mixture, lime-sulfur and emulsions, are prepared in the laboratory and studied in detail in the classroom; some of the substances prepared may be analyzed. Particular attention will be given to a study of the composition, properties and reactions of soils. Approximate quantitative determinations of a number of constituents of soils and fertilizers will be made.

3 class hours.
2 2-hour laboratory periods, credit, 5.
Dr. BUTLER.

4. **I. ADVANCED GENERAL CHEMISTRY.** — For freshmen. A review of general chemistry centered, for the most part, about the laboratory work. Text-books, Holmes' "General Chemistry," and Peters' "The Preparation of Substances Important in Agriculture." The laboratory work takes the synthetic form. Substances of agricultural importance are prepared in quantity and studied in detail by the student. These include ammonium sulfate, superphosphate, muriate and sulfate of potash, arsenate of lead, Paris green, Bordeaux mixture, lime-sulfur and emulsions.

2 class hours.
2 2-hour laboratory periods, credit, 4.
Professor PETERS.

Prerequisite, Entrance Chemistry.

5. **II. INORGANIC AGRICULTURAL CHEMISTRY.** — For freshmen. A study of the chemical composition, properties and reactions of soils, fertilizers, fungicides and insecticides. The laboratory work is divided into three parts: (a) qualitative examination of soil, plant ash and superphosphate; (b) approximate quantitative determination of moisture, ash, carbonic acid, phosphoric acid, potash, nitrogen, etc., in farm crops, soils and fertilizers; (c) special work on retention of salts by soil, leaching of lime from the soil by carbonated water, etc.

2 class hours.
2 2-hour laboratory periods, credit, 4.
Assistant Professor SEREX.

25. **II. QUALITATIVE ANALYSIS.** — *Basic.* — For sophomores. The systematic analysis of metallic salts, presented from the ionic viewpoint. A close study of the tests used in the separation and identification of the metals, and the application of these tests to unknown mixtures. Text, Medicus' "Qualitative Analysis," with Stieglitz's "Qualitative Analysis" and Gooch and Browning's "Qualitative Analysis" for reference. This course should be taken by all intending to follow chemistry as a vocation.

2 class hours.
2 2-hour laboratory periods, credit, 4.
Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 5.

26. **III. QUALITATIVE ANALYSIS.** — *Acidic.* — For sophomores. A continuation of Course 25.

1 class hour.
2 2-hour laboratory periods, credit, 3.
Assistant Professor SEREX.

30. **II. ORGANIC AGRICULTURAL CHEMISTRY.** — For sophomores; juniors and seniors may elect. Embraces the study of the most important groups of organic compounds of plants and animals, the composition of plants, the chemistry of

plant growth, plants as food and as industrial material, the composition of animals, the chemistry of digestion, also the study of some of the products related to plants and animals, such as milk, butter, cheese, sugar and alcohol. The treatment of the subject is general, avoiding (so far as possible) complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the general chemistry of plants and animals and agricultural processes and products. Textbook: Chamberlain's "Organic Agricultural Chemistry."

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor CHAMBERLAIN.

Elective Courses.

51. **I. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. Consists of a systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates and proteins. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and is especially planned for those majoring in chemistry or the other sciences. Textbook: Chamberlain's "Organic Chemistry." Those electing Course 51 are expected to elect Course 52.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

Prerequisites, Chemistry 2 or 5, and Chemistry 26 for those majoring in chemistry.

52. **II. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. A continuation of Course 51.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

53. **III. ORGANIC CHEMISTRY.** — For juniors; seniors may elect. A continuation of Courses 51 and 52, dealing principally with compounds of the benzene series.

3 class hours.

2 3-hour laboratory periods, credit, 6.

Professor CHAMBERLAIN.

61. **I. QUANTITATIVE ANALYSIS.** — For juniors; seniors may elect. The course includes the gravimetric determination of chlorides, sulfates, iron, the volumetric analysis of acids and bases, and the dichromate method for iron. Text: Smith's "Quantitative Chemical Analysis."

1 class hour.

2 4-hour laboratory periods, credit, 5.

Professor PETERS.

Prerequisite, Chemistry 25. Course 26 is prerequisite for those majoring in chemistry.

62. **II.** For juniors; seniors may elect. A continuation of Course 61. A study of potassium permanganate as a volumetric reagent; limestone is analyzed; phosphorus is determined in soil; and the perchlorate method for potash is carried out. Analytical problems are a part of the work.

2 class hours.

2 4-hour laboratory periods, credit, 6.

Professor PETERS.

63. **III.** For juniors; seniors may elect. A continuation of Course 62. The study of the oxidation reactions of iodine, and precipitating reactions of thiocyanate; Paris green and lead arsenate are analyzed. The work closes with water analysis. By means of assigned readings students are shown the importance of library work. "Methods of the American Public Health Association" is used as a supplementary text.

1 class hour.

2 4-hour laboratory periods, credit, 5.

Professor PETERS.

75. **I. PHYSICAL CHEMISTRY.** — For seniors. A study of the fundamental theories and laws of physical chemistry together with laboratory work which includes the important methods of physicochemical measurements.
3 class hours.

6 laboratory hours, credit, 6.
Assistant Professor SEREX.

Prerequisite, Chemistry 61.

80. **I. PHYSIOLOGICAL CHEMISTRY.** — For seniors. Supplementary to Courses 51, 52 and 53. To those who expect to take up scientific work in microbiology, botany, agronomy, animal husbandry, etc., and who have had Courses 51, 52 and 53, it gives acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 51, 52 and 53 are built up in the living organism or are used as food by it. In the lectures the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory experimental studies are made of the animal body and the processes and products of digestion, secretion and excretion.

3 class hours.

2 2-hour laboratory periods, credit, 5.
Dr. BUTLER.

81. **II. FOOD ANALYSIS.** — For seniors. Primarily for the study of milk and butter analytically. May also include the analyses of other food stuffs for nutritive value or for impurities.

1 class hour.

2 4-hour laboratory periods, credit, 5.
Dr. BUTLER.

Prerequisite, Chemistry 61.

86. **II. REVIEW OF GENERAL CHEMISTRY.** — For seniors. Primarily for students majoring in chemistry; others may elect by permission from the instructor. A knowledge of physical chemistry is desirable. The review of general chemistry is largely theoretical, using as text Alexander Smith's "Introduction to Inorganic Chemistry," or Mellor's "Modern Inorganic Chemistry." Some subjects may be enlarged by special lectures, such as: atomic structure, Werner's co-ordination theory, crystal structure as shown by X-rays.

3 class hours.

Credit, 3.
Professor PETERS.

87. **III. HISTORY OF CHEMISTRY.** — For seniors. An historical and biographical study of chemistry and chemists. The aim of the course is: (1) to give the student a comprehensive view of the science as a whole, through a study of the development of new ideas and the establishment of new theories and laws; and (2) to arouse an enthusiastic interest in the subject and an appreciation of the true spirit of scientific research through a sympathetic presentation of the work and lives of the great chemists who have been the creators of the chemistry of to-day. The course will consist of lectures, supplemented by systematic correlated reading, and the preparation of reports or essays.

3 class hours.

Credit, 3.
Professor CHAMBERLAIN.

90. **II. SPECIAL WORK IN CHEMICAL PROBLEMS.** — For seniors. An assignment is made to each student and he is expected to learn how research is done. The problem may be in analytical, general, agricultural or industrial chemistry, and is to be continued for two terms.

1 class hour.

8 laboratory hours, credit, 5.
Professor PETERS.

91. **III. SPECIAL WORK IN CHEMICAL PROBLEMS.** — For seniors. As stated under Course 90.

1 class hour.

8 laboratory hours, credit, 5.
Professor PETERS.

92. **II. SPECIAL WORK IN ORGANIC CHEMISTRY.** — For seniors. In this course, as in Courses 90 to 97, the student may give his attention primarily to one line of chemical study for the purpose of becoming acquainted with methods of research. To those whose tastes and interests are in connection with the organic problems of agricultural chemistry, many subjects of study present themselves, among which may be mentioned: proteins, carbohydrates, fats, organic nitrogenous compounds in fertilizers and soils and their relation to plants, the commercial production of alcohol from agricultural products, dyes, synthetic medicines, perfumes, etc.

1 class hour.

8 laboratory hours, credit, 5.
Professor CHAMBERLAIN.

Prerequisites, Chemistry 51, 52, 53 and 80.

93. **III. SPECIAL WORK IN ORGANIC CHEMISTRY.** — For seniors. As stated under Course 92.

1 class hour.

8 laboratory hours, credit, 5.
Professor CHAMBERLAIN.

Prerequisite, Chemistry 92.

94. **II. SPECIAL WORK IN PHYSICAL CHEMISTRY.** — For seniors. The field of agricultural chemistry offers many problems that have been attacked through the methods of physical chemistry; such, for example, are the hydrolysis of salts and of minerals and the absorption of salts and fertilizers by soils. For students interested in colloid chemistry a short course in the fundamentals may be pursued in this term with the ultimate object of selecting a problem along this line. This course is designed to familiarize the student with the literature on a special topic, and to give an insight into the methods of research. Each student selects one line of work and follows it through the course, repeating some of the original work.

1 class hour.

8 laboratory hours, credit, 5.
Assistant Professor SEREX.

Prerequisite, Chemistry 75.

95. **III. SPECIAL WORK IN PHYSICAL CHEMISTRY.** — For seniors. As stated under Course 94.

1 class hour.

8 laboratory hours, credit, 5.
Assistant Professor SEREX.

Prerequisite, Chemistry 94.

96. **II. SPECIAL WORK IN PHYSIOLOGICAL AND FOOD CHEMISTRY.** — For seniors. An opportunity for those so interested to pursue the study of some physiological or food problem. This course is intended to familiarize the student with the nature of research under the careful supervision of the instructor. The problems of physiological chemistry are of a varied and interesting character.

1 class hour.

8 laboratory hours, credit, 5.
Dr. BUTLER.

Prerequisite, Chemistry 80.

97. **III. SPECIAL WORK IN PHYSIOLOGICAL AND FOOD CHEMISTRY.** — For seniors. As stated under Course 96.

1 class hour.

8 laboratory hours, credit, 5.
Dr. BUTLER.

Prerequisite, Chemistry 80.

Entomology.

Professor FERNALD, Professor CRAMPTON, Assistant Professor ALEXANDER, Mr. FARRAR.

Introductory Course 26 presents a comprehensive view of the relation of insects to man, particularly as crop pests. The most important pests are carefully studied, together with the methods for their control. Courses 50 and 51 are arranged for special study of the pests of any one line of agricultural or horticultural occupation, selected by the student according to his plan of future work, with the intent of

making him thoroughly familiar with the pests he will meet in his selected work after graduation, and the means of controlling them. The remaining courses are for the training of men as State or experiment station entomologists; for those going into the care of trees, etc., on estates, or for cities and towns; and as entomological experts, for which the demand has been very large.

Fernald Hall provides excellent lecture rooms and laboratories for this department. The laboratories are provided with individual desks, equipped with microscopes and all needed apparatus of all kinds. Dissecting microscopes, binoculars, microtomes, photographic apparatus, glassware and reagents are available for use and electric light and gas are connected with each desk. Two laboratories, one for juniors and seniors, the other for graduate students, are thus equipped. A department library containing all the more important works on insects, supplemented by others on the subject in the main library, and by the private libraries of the professors, make available more than 25,000 books and pamphlets on this subject. In addition, all the current magazines are received and their files are accessible to every one. A card catalogue giving references to the published articles on different insects contains about 65,000 cards, and is probably the largest index of its kind in the world. Spray pumps, nozzles and spraying appliances of all kinds are in use in various parts of the courses, and a large collection of insecticides is accessible for study. Photographic rooms are specially prepared for the photography of insects, and the greenhouses, gardens, orchards and the grounds of the college provide wide opportunities for the study, under natural conditions, of insect pests.

Course 26 is required of sophomores in the Divisions of Horticulture and Science, and may be elected by students in the other Divisions.

26. I. GENERAL AND ECONOMIC ENTOMOLOGY. — For sophomores; juniors and seniors may elect. For students who desire some knowledge of insects, but who cannot give more than one term to the subject; also an introduction to the later courses for those who intend to follow entomology further. Touches briefly upon the structure of insects so far as this is needed for such a course; deals with metamorphosis, classification to the larger groups, and discusses the most important methods and materials used for control. The greater part of the time is devoted to special study of the most important insect pests, particularly of New England, showing their modes of life, the injuries they cause, and the best methods of control. In this way the most serious pests of fruit trees, ornamental trees and shrubs, market-garden and green-house pests, those attacking field crops and those affecting animals and man, are treated.

4 class hours.

Credit, 4.

Professor FERNALD.

28. III. GENERAL AND ECONOMIC ENTOMOLOGY. — For sophomores; juniors and seniors may elect. Three class-room exercises to about May 1; thereafter three field exercises per week. In the field the work of insects found will be studied and a collection of insects made. Methods of collecting, preparing and mounting insects for collections will be taught. In the class room until about May 1, studies preparatory to the field work will be given. Class limited to 30 members. 3 class hours to about May 1; thereafter,

3 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Entomology 26.

50. I. PESTS OF SPECIAL CROPS. — For juniors; seniors may elect. For students not majoring in entomology. The laboratory work is largely individual in this term. Accordingly, students majoring in subjects other than entomology, but who desire a more complete knowledge of the insects connected with their own major line of work, can obtain it here. A student majoring in floriculture, for example, will devote his laboratory time to a careful study of the insects injuring floricultural crops, learning how to recognize them and their work in their

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different stages, and the best methods for their control. Courses of this kind are available on the insects attacking field crops, market-garden crops, tree fruits, small fruits, shade trees and shrubs, flowers, forest trees, the domesticated animals, household pests and man. This work may be continued in the winter term also. (See Course 51, II.)

3 2-hour laboratory periods, credit, 3.
Professor FERNALD.

Prerequisite, Entomology 26.

51. II. PESTS OF SPECIAL CROPS. — As stated in Course 50, I. For students not majoring in entomology. Those who were not able to take Entomology 50 in the fall may take it here. Those who took Entomology 50 in the fall have an opportunity to continue the work during this term also.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Entomology 26.

52. I. CLASSIFICATION OF INSECTS. — For juniors specializing in entomology. Laboratory work on the identification and classification of insects of various groups.

2 2-hour laboratory periods, credit, 2.
Assistant Professor ALEXANDER.

Accompanying Entomology 53.

53. I. INSECT MORPHOLOGY. — For juniors specializing in entomology and for other juniors or seniors having the prerequisite. The lectures treat of the external and internal anatomy of insects, particularly those parts used in identification, a knowledge of which is needed, in the accompanying Course 52. In the laboratory the external anatomy of the most important groups is studied, emphasizing the characters used in learning the names of insects, and to teach the methods of using analytical keys.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Professor CRAMPTON.

Prerequisite, Entomology 26.

55. II. Continuation of Course 52, one-half term. Insects and their relation to disease, one-half term.

4 2-hour laboratory periods, credit, 4.
Professors CRAMPTON and ALEXANDER.

56. II. PESTS OF SPECIAL CROPS. — For juniors majoring in entomology. Individual laboratory work on the most important insect pests of this country, and the preparation and presentation of bulletin material on them.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

57. III. CLASSIFICATION OF INSECTS. — Continuation of Course 55.

2 2-hour laboratory periods, credit, 2.
Assistant Professor ALEXANDER.

75. III. FOREST AND SHADE-TREE INSECTS. — For juniors; seniors may elect. The lecture work deals with the principles and methods of controlling insects which attack forests and forest products, shade trees, etc. The laboratory periods are devoted to a study of the more important species, their identification, biology and specific control measures. Field work supplements laboratory study if time permits. One entire Saturday for field excursion also required.

1 class hour.

3 2-hour laboratory or field periods, credit, 4.
Assistant Professor ALEXANDER.

Prerequisites, Entomology 26; 52 and 53 desirable.

76. **I. ADVANCED ENTOMOLOGY.** — For seniors. Studies on insect bionomics; scale insects, their structure, habits, methods of mounting, identification, etc.; studies of the animals not insects with which entomologists are expected to deal. 2 class hours.

3 2-hour laboratory periods, credit, 5.
Professors CRAMPTON and ALEXANDER.

Prerequisite, Entomology 55.

77. **II. ADVANCED ENTOMOLOGY.** — For seniors. Studies of the life history, habits and methods of control of the important insect pests of the United States; recognition tests of these pests and an examination of the literature on them; methods of bulletin preparation.

3 2-hour laboratory periods, credit, 3.
Assistant Professor ALEXANDER.

Prerequisite, Entomology 76.

78. **III. ADVANCED ENTOMOLOGY.** — For seniors. Classification of insects and of their early stages; principles of classification, the use of literature on entomology and the preparation of bibliographies and indices; the enemies of insects. 1 class hour.

3 2-hour laboratory or field periods, credit, 4.
Professors FERNALD, CRAMPTON and ALEXANDER.

Prerequisite, Entomology 77.

79. **I. INSECTICIDES AND THEIR APPLICATION.** — For seniors; juniors may elect. Lectures on the composition, preparation and methods of application of insecticides; other control measures.

3 class hours.

Credit, 3.
Professor FERNALD.

Prerequisite, Entomology 26.

90. **II. EVOLUTION.** — For seniors; juniors may elect. In order to demonstrate the universal scope and operation of the laws of evolution, the course includes a brief sketch of the probable origin and evolution of matter as viewed in the light of modern physical and chemical research; the evolution of the solar system, leading to the formation of the earth; the changes in the earth, preparatory to the production of life; the physical and chemical basis of life; the probable steps in the formation of living matter, and the theories concerning it; the evolution of living things; the developmental history of man, and of the races of mankind; the evolution of human intelligence, languages, culture, institutions, etc., and man's probable future in the light of his past development. Especial consideration is given to the factors of evolution, the basic principles of heredity, variation and similar topics, with particular reference to their application to human welfare; and the recent contributions in the field of entomology to the advancement of our knowledge of these fundamental principles are briefly reviewed.

3 class hours.

Credit, 3.
Professor CRAMPTON.

Courses in Beekeeping.

65. **III. INTRODUCTORY BEEKEEPING.** — For juniors. A detailed study of the normal behavior of the honey bee and the colony as a whole, followed by a study of such practical work of the apiary as is carried on in spring and summer. In so far as possible the laboratory work parallels the lecture work, and both are made to follow the seasonal processes of the colony. Spring management, swarm control and the production and care of the honey crop are covered thoroughly. The course is designed to meet the needs of the horticulturist as well as those of the honey producer, and should be followed by Course 85, I.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Mr. FARRAR.

85. **I. INTRODUCTORY BEEKEEPING.** — For seniors. A continuation of Course 65 and a completion of the beekeeping year. Fall management, preparation for winter and wintering are studied in detail in lectures and laboratory work. Original

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 problems for student solution. It is highly advisable for those taking Course 65 to take Course 85, and thus complete the annual cycle of beekeeping activity.
 2 class hours. 1 2-hour laboratory period, credit, 3.
 Mr. FARRAR.

86. **II. ADVANCED BEEKEEPING.** — For seniors. A study of the special problems with which the beekeeper deals. The diagnosis and control of the various bee diseases, production of wax, sources of nectar, honey, bee anatomy and physiology, and marketing of the crop are some of the principal topics discussed. The course is designed for those who intend going into honey production either as a principal occupation or as a side line. Field trips to commercial apiaries; laboratory practice in queen rearing.
 2 class hours. 1 2-hour laboratory period, credit, 3.
 Mr. FARRAR.

Mathematics and Civil Engineering.

Professor OSTRANDER, Professor MACHMER, Assistant Professor MOORE, Mr. BOUTELLE.

The work of the freshman year is required. It is intended to furnish the necessary drill and groundwork needed for many of the scientific and practical courses of other departments. Thoroughness and accuracy are insisted upon. The advanced work in mathematics is taught from a practical standpoint, and many of its applications to other subjects are given. The courses in surveying and civil engineering are given to furnish the groundwork for a professional career. Special emphasis is given to the subjects bearing on highway construction and maintenance.

For drawing, a room on the north side is used for the draughting. It has draughting tables, T squares, scales, etc., for twenty students. Vernier protractors, parallel rules and steel T squares are available for precise work. A small room is devoted to blueprinting.

In surveying, the department has a considerable number of chains and tapes, two railroad compasses, a builder's level, two dumpy levels, two Y levels and two old levels used for teaching the adjustments. Six transits are available for student use. Two are provided with solar attachments. An omnimeter with vernier reading to ten seconds is available for geodetic work. A hand level, mining aneroid barometer, and prismatic compass are provided for reconnaissance work. A set of Gilmor's needles and a Fairbanks' machine are used for cement testing.

Required Courses.

1. **I. HIGHER ALGEBRA.** — For freshmen. A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, undetermined coefficients, summation of series, variation, continued fractions, determinants, permutations and combinations, logarithms, theory of equations. Reitz and Crathorne's "College Algebra."

4 class hours. Credit, 4.
 Professors MACHMER, MOORE and Mr. BOUTELLE.

2. **II. HIGHER ALGEBRA.** — As stated under Course 1. Required of all who present solid geometry for entrance.

3 class hours. Credit, 3.
 Professors MACHMER, MOORE and Mr. BOUTELLE.

3. **II. SOLID GEOMETRY.** — For freshmen. Theorems and exercises on the properties of straight lines and planes, dihedral and polyhedral angles, prisms, pyramids and regular solids; cylinders, cones and spheres; spherical triangles and the measurement of surfaces and solids. Wentworth and Smith's "Solid Geometry." Required unless accepted for admission.

3 class hours. Credit, 3.
 Professor MOORE and Mr. BOUTELLE.

4. **II. MENSURATION AND COMPUTATION.** — For freshmen. A review of methods of computation, with special emphasis on short and abbreviated processes, together with methods of checking computations and of forming close approximations; use of slide rule. Also the graph, mensuration of plane and solid figures, weights and measures and elementary mechanism. Numerous practical problems are selected from such subjects as the following: the mathematics of woodworking; rough lumber; general construction; forestry methods in heights of trees; pulleys, belts and speeds; power and its transmission; dairying; agronomy; computation of areas from simple measurements.
2 class hours.

Credit, 2.

Professor MACHMER and Mr. BOUTELLE.

5. **III. PLANE TRIGONOMETRY.** — For freshmen. The trigonometric functions as lines and ratios; proofs of the principal formulas, transformations; inverse functions, use of logarithms; the applications to the solution of right and oblique triangles; practical applications.
3 class hours.

Credit, 3.

Professors MACHMER, MOORE and Mr. BOUTELLE.

Elective Courses.

26. **II. PLANE SURVEYING.** — For sophomores; juniors and seniors may elect. The elements of the subject, including the adjustment and use of the usual instruments. Textbook and lectures.
3 class hours.

Credit, 3.

Professors OSTRANDER and MOORE.

27. **III. PLANE SURVEYING.** — For sophomores; juniors and seniors may elect. As stated under Course 26. Includes field work.

3 2-hour laboratory periods, credit, 3.
Professors OSTRANDER and MOORE.

Prerequisite, Mathematics 26.

50. **I. ANALYTIC GEOMETRY.** — For juniors; seniors may elect. A discussion of the geometry of the line, the circle, conic sections, and the higher plane curves. Fine and Thompson's "Co-ordinate Geometry."
3 class hours.

Credit, 3.

Professor MACHMER.

Prerequisites, Mathematics 1, 2, 3 and 5.

51. **II. DIFFERENTIAL AND INTEGRAL CALCULUS.** — For juniors; seniors may elect. A first course in the subject, with some of the more important applications. Granville's "Differential and Integral Calculus."
5 class hours.

Credit, 5.

Assistant Professor MOORE.

Prerequisites, Mathematics 1, 2, 3 and 5.

52. **III. INTEGRAL CALCULUS.** — For juniors; seniors may elect. A continuation of Course 51.
5 class hours.

Credit, 5.

Assistant Professor MOORE.

Prerequisite, Mathematics 51.

53. **II. ELEMENTARY STRUCTURES.** — For juniors; seniors may elect. An elementary course in roofs and bridges. Textbook and lectures.
3 class hours.

1 2-hour laboratory period, credit, 4.

Professor OSTRANDER.

75. **I. HYDRAULICS AND SANITARY ENGINEERING.** — For seniors; juniors may elect. Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment. Textbook and lectures.
5 class hours.

Credit, 5.

Professor OSTRANDER.

76. **I. MATERIALS OF CONSTRUCTION. FOUNDATIONS AND MASONRY CONSTRUCTION.** — For seniors; juniors may elect. Textbook and lectures. 5 class hours. Credit, 5.

Professor OSTRANDER.

77. **II. ROADS AND RAILROADS.** — For seniors; juniors may elect. Topographic and higher surveying, highway construction, earthwork, pavements and railroad construction. Textbook and lectures. 3 class hours. Credit, 3.

Professor OSTRANDER.

78. **III. ROADS AND RAILROADS.** — For seniors; juniors may elect. As stated under Course 77.

3 2-hour laboratory periods, credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 77.

Microbiology.

Professor MARSHALL, Assistant Professor BRADLEY, Mr. FULLER, Miss GARVEY.

Three objectives are sought in the arrangement of the courses following: (1) Introductory courses (50 and 51) needed in the general training of every college student. (2) An introductory course followed by a specific course (as 80, 81, 82, 83), necessary to every student engaged in the Division of Agriculture, with which the specific course deals. (3) Introductory courses (50 and 51) followed by Courses 52, 75, 76 and 81, preparatory for students who are aiming to specialize in agricultural microbiology. (Courses 75, 76 and 81 are adapted to those having Courses 50 and 51 only, and are also adapted to those majoring in microbiology.)

The microbiological work is carried on in a building especially designed for it. There are 4 class laboratory rooms, 8 private laboratory rooms, 1 lecture room, 5 incubator rooms, 3 sterilizing rooms, 3 hood rooms, 3 washing rooms, 3 inoculating rooms, 3 weighing rooms, an animal room, a photographic and dark room, a sub-basement refrigerator room, a library and 4 office rooms.

The class laboratory rooms are so arranged that individual desks are available for student use. Hot and cold water and gas connections are convenient for each desk; high-pressure steam and electric connections are also available. The building is well lighted and of sanitary construction; all the walls are of brick, and the building is fireproof.

The library is equipped with such books and current periodicals as are useful in the conduct of bacteriological work and investigations. Twenty-four scientific magazines are available regularly.

There are incubators, both electric and gas, hot-air sterilizers, ordinary steam sterilizers, autoclaves, an inspissator, blood-testing apparatus, vacuum apparatus, air-pressure apparatus, shaker, grinder, centrifugal machines, a water still of 5 gallons per hour capacity, Hoskin's combustion furnace, a balopticon, complete microphotographic equipment, microscopes, microtome, and such other apparatus, glassware and chemicals as are needed for extensive and intensive work.

Required Course.

30. **I and III. ELEMENTARY MICROBIOLOGY.** — Required of sophomores majoring in Agriculture and Rural Home Life. Designed to make micro-organisms real and significant to the student who seeks some knowledge of their activities. An attempt is made to place them among living organisms, to demonstrate their wide distribution in nature and to indicate what they do. Some of the essential methods of control and propagation are reviewed. Owing to the time limit, this course may be regarded as an introductory survey course only.

6 laboratory hours, credit, 3.

Mr. FULLER.

33. **III. PHYSIOLOGY.** — For sophomores. Offered for the year 1926-27. 3 class hours.

1 2-hour laboratory period, credit, 4.

Miss GARVEY.

Elective Courses.

50. **I, II and III.** INTRODUCTORY AND GENERAL MICROBIOLOGY. — For juniors; seniors may elect. Aims to provide elementary basis for microbial studies and interpretation, to enable students to pursue special pertinent courses which will serve as supports in practical electives or majors, and to furnish students with such material as will be valuable in understanding public health problems. 2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor MARSHALL and Mr. FULLER.

51. **II and III.** MORPHOLOGICAL, CULTURAL AND PHYSIOLOGICAL MICROBIOLOGY. — For juniors; seniors may elect. Types of micro-organisms, technique of handling, methods of culture and functions of micro-organisms are considered. This course is fundamental to all advanced and extended microbiological studies.

10 laboratory hours, credit, 5.

Mr. FULLER.

Prerequisite, Microbiology 30 or 50.

52. **III.** ADVANCED MORPHOLOGICAL, CULTURAL AND PHYSIOLOGICAL MICROBIOLOGY. — For juniors; seniors may elect. Prepares for a more intimate knowledge of microbiological agricultural problems. To accomplish this object it is necessary to provide more advanced technique and methods of culture, together with a more extensive knowledge of micro-organisms and their functions.

10 laboratory hours, credit, 5.

Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

60. **I.** PUBLIC HEALTH. — For juniors; seniors may elect. Considers the relation of the human body to its environment in the maintenance of health and the production of disease. This study is based upon human anatomy and physiology. The individual, as a member of society, governed by natural laws, is also of fundamental importance. A knowledge and an interpretation are sought of the usual agencies connected with health and disease, as air, water, sewage, dairy products, foods, drugs, carriers, vaccines and their prophylactic means, biological products as diagnostic and remedial materials and public health practices now recognized. Diseases of public health significance are reviewed, their control considered and their social values discussed.

3 class hours.

Credit, 3.

Professor MARSHALL.

61. **II.** PUBLIC HEALTH. — For juniors; seniors may elect. As stated under Course 60.

3 class hours.

Credit, 3.

Professor MARSHALL.

62. **III.** PUBLIC HEALTH. — For juniors; seniors may elect. As stated under Course 60.

3 class hours.

Credit, 3.

Professor MARSHALL.

75. **II.** AGRICULTURAL MICROBIOLOGY. — For seniors; juniors may elect. This general comprehensive course is designed to cover in an elementary manner those subjects only which confront the student of general agriculture, — the microbiological features of air, water, sewage, soil, dairy, fermentations, food, vaccines, antisera, microbial plant infections, methods and channels of infections, immunity and susceptibility, microbial infections of man and animals, methods of control or sanitary and hygienic practices.

10 laboratory hours, credit, 5.

The DEPARTMENT.

Prerequisite, Microbiology 51.

76. **III. AGRICULTURAL MICROBIOLOGY.** — For seniors; juniors may elect. As stated under Course 75.

10 laboratory hours, credit, 5.
The DEPARTMENT.

Prerequisite, Microbiology 75.

80. **II. SOIL MICROBIOLOGY.** — For seniors; juniors may elect. Such subjects as the number and development of micro-organisms in different soils; the factors which influence their growth, food, reaction, temperature, moisture and aeration; the changes wrought upon inorganic and organic matter in the production of soil fertility, ammonification, nitrification and denitrification; fixation of nitrogen symbiotically and non-symbiotically; methods of soil inoculation receive attention.

10 laboratory hours, credit, 5.
Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

81. **I. HYGIENIC MICROBIOLOGY.** — For seniors; juniors may elect. An attempt is made to select certain material which is basic to public hygiene and sanitation, as applied to man and animals. The microbiology of water supplies, food supplies, vaccines, antisera or antitoxins; the channels by which micro-organisms enter the body, the influence of body fluids and tissues upon them, body reactions with micro-organisms (susceptibility and immunity); the micro-organisms of some of the most important infectious diseases, methods of control, including disinfectants and disinfection, antiseptics, antiseptis and asepsis, are treated.

10 laboratory hours, credit, 5.
Assistant Professor BRADLEY.

Prerequisite, Microbiology 51.

82. **I. DAIRY MICROBIOLOGY.** — For seniors; juniors may elect. Special emphasis is placed upon milk supplies. The microbial content of milk, its source, its significance, its control; microbial taints and changes in milk; groups or types of organisms found in milk; milk as a carrier of disease-producing organisms; the value of straining, aeration, clarification, centrifugal separation, temperature, pasteurization; the abnormal fermentations of milk; bacteriological milk standards and their interpretation; ripening of milk and cream; the bacterial content of butter; a passing survey of the microbiology of cheeses; a study of special dairy products, as ice cream, condensed milk, artificial milk drinks (the products of microbial actions), represents a list of topics considered.

10 laboratory hours, credit, 5.
Professor MARSHALL and Miss GARVEY.

Prerequisite, Microbiology 51.

83. **III. FOOD MICROBIOLOGY.** — For seniors; juniors may elect. A study of the principles of food preservation, and food preservation by means of drying, canning, refrigerating and addition of chemicals, is pursued. Food fermentations, as illustrated by bread, pickles, sauerkraut, ensilage, vinegar, wine, etc., are examined. Decomposition of foods, as may be seen in meat, oysters, fish, milk, etc., as well as diseased and poisonous foods, receive consideration. Contamination of food supplies by means of water, sewage, handling, exposure, diseased persons, etc., is of especial significance, and is demonstrated by laboratory exercises. Laboratory inspection of foods is now a subject of great import and is given attention.

10 laboratory hours, credit, 5.
Professor MARSHALL and Miss GARVEY.

Prerequisite, Microbiology 51.

Physics.

Professor POWERS, Assistant Professor ALDERMAN.

The fundamental and basic importance of the laws and phenomena of physics makes necessary no explanation of the introduction of this subject into the curriculum of an agricultural college. The logical development of the subject emphasizes the importance of physics as a science in itself. Special emphasis is laid, however, on the correlation of the principles studied with the sciences of agriculture, botany, chemistry and zoölogy, thus furnishing an extra tool by use of which the student's work in all the subjects may be more effective.

In Courses 25, 26 and 27 the subject-matter is presented with the idea of its special application primarily in the work in agriculture and general science. The full year's work is required of all students continuing work specifically in the Division of Science. Course 25 is required of all students. The subject-matter is especially selected and arranged for its practical application rather than its theoretical development. Courses 50, 51 and 52 are advised for students in chemistry, general biology, microbiology and general science. The subject-matter is selected, and the courses developed, with the idea of making the student proficient in laboratory manipulation. Sufficient theory is given in connection with the work to enable the student to apply the knowledge and practice thus gained in the department indicated above.

The department has at its command a building on the east campus, containing a general lecture room and laboratory for sophomore work, a laboratory for junior work, and in the basement one small laboratory for quantitative work in light measurement. There is also in the basement a fairly well-equipped shop for the repair and construction of apparatus used in the department work. The usual apparatus for the demonstration in the lecture room is in the possession of the department.

Required Courses.

25. **I. GENERAL PHYSICS.** — For sophomores. Mechanics of solids and fluids. This course includes statics, with equilibrium of rigid bodies, work, energy and friction; kinetics, considering rectilinear motion and motion in a curved path; harmonic motion; rotation of rigid bodies, including kinematics of rotation; liquids and gases, with properties of fluids at rest and in motion; properties of matter and its internal forces, including elasticity, capillarity, surface tension. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professors POWERS and ALDERMAN.

26. **II. ELECTRICITY AND MAGNETISM.** — For sophomores; juniors and seniors may elect. Includes such subject-matter as magnetism, electrostatics, electric currents with their production, chemical, heating and mechanical effects; battery cells, measurement of voltage, current flow and resistance, motors and generators, oscillations. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professors POWERS and ALDERMAN.

27. **III. HEAT AND LIGHT.** — For sophomores; juniors and seniors may elect. Thermometry, expansion, colorimetry and specific heat, transmission of heat, changes of state, radiation and absorption. Wave theory of light, optical instruments, analysis of light, color, interference, diffraction, polarization. 3 class hours.

1 2-hour laboratory period, credit, 4.
Professors POWERS and ALDERMAN.

Elective Courses.

50. **I.** 51. **II.** 52. **III. EXPERIMENTAL PHYSICS. HEAT, LIGHT, ELECTRICITY, MAGNETISM AND THERMIONICS.** — For juniors; seniors may elect. This course consists of a series of physical measurements in the laboratory, accompanied by lectures. The lectures deal chiefly with the methods and principles involved

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in the laboratory work. High-grade instruments of precision are employed in the laboratory work, and the student is expected to acquire some ability to make accurate observations. The primary object of the course is to develop in the student scientific habits of thinking by direct personal observation of physical phenomena.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Professor POWERS.

Prerequisite, Physics 27.

55. **III. ANALYTICAL MECHANICS.**—For juniors; seniors may elect. An introduction to the application of the calculus to the mechanics of solids; statics and kinetics of rigid bodies; elasticity; vector analysis. For students who have taken or are taking Mathematics 52. Not given 1926-27.
3 class hours. Credit, 3.
Assistant Professor ALDERMAN.

75. **I.** 76. **II.** 77. **III. THEORY OF LIGHT.**—For seniors. Propagation of light, formation of optical images, photography, optical instruments, interference, diffraction, spectroscopy, optical phenomena of the atmosphere, polarization and double refraction, magneto-optics, photo-electricity, radiation, electromagnetic waves, X-rays and crystal structure, electron theory, principle of relativity. Not given 1926-27.
3 class hours. Credit, 3.
Professor POWERS.

Prerequisite, Mathematics 51.

Veterinary Science and Animal Pathology.

Professor GAGE, Assistant Professor LENTZ.

The courses in veterinary science have been arranged to meet the needs (1) of students who propose following practical agriculture; (2) of prospective students of human and veterinary medicine; and (3) of teachers and laboratory workers in the biological sciences.

The department occupies a modern laboratory and hospital stable, built in accordance with the latest principles of sanitation. Every precaution has been taken in the arrangement of details to prevent the spread of disease, and to provide for effective heating, lighting, ventilation and disinfection.

The main building contains a large working laboratory for student use, and several small private laboratories for special work. There is a lecture hall, a museum, a demonstration room, a photographing room and a workshop. The hospital stable contains a pharmacy, an operating hall, a post-mortem and dissecting room, a poultry section, a section for cats and dogs, and 6 sections, separated from each other, for horses, cattle, sheep and swine. The laboratory equipment consists of a dissectible Auzoux model of the horse and Auzoux models of the foot and the leg, showing the anatomy and the diseases of every part. The laboratories also have modern, high-power microscopes, microtomes, incubators and sterilizers, for work in every department of veterinary science, including pathology, serology and parasitology. There are skeletons of the horse, the cow, the sheep, the dog and the pig, and a growing collection of anatomical and pathological specimens. The lecture room is provided with numerous maps, charts and diagrams.

Elective Courses.

50. **II. VETERINARY HYGIENE AND STABLE SANITATION.**—For juniors; seniors may elect. Familiarizes students with the relation of water, food, air, light, ventilation, care of stables, disposal of excrement, individual hygiene, etc., to the prevention of disease in farm animals.
5 class hours. Credit, 5.
Assistant Professor LENTZ.

53. I. GROSS VETERINARY ANATOMY. — For juniors; seniors and graduate students may elect. The detailed study of the skeleton is followed by dissection of the muscular system and the study of joints.

2 3-hour laboratory periods, credit, 3.
The DEPARTMENT.

54. II. GROSS VETERINARY ANATOMY. — For juniors; seniors and graduate students may elect. The continuation of Veterinary 53, consisting of dissection and study of the circulatory, nervous, digestive, respiratory, and genito-urinary systems.

2 3-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Veterinary 53.

75. I. COMPARATIVE (VETERINARY) ANATOMY. — For seniors; juniors may elect. The anatomy of the horse is studied in detail, and that of other farm animals, particularly the ox. This course is essential for those students wishing to elect Course 77. It is a lecture and demonstrational course and open to all students interested. It is not a course in dissection anatomy.

5 class hours.

Credit, 5.
Assistant Professor LENTZ.

76. II. GENERAL VETERINARY PATHOLOGY. — For seniors; juniors may elect. Fundamental, general, pathological conditions, as for example, inflammation, fever, hypertrophy, atrophy, etc., a knowledge of which is essential in prevention, diagnosis, and treatment of disease, are studied. The course in pathology is followed by a brief consideration of materia medica, therapeutic measures, and poisonous plants.

5 class hours.

Credit, 5.
Assistant Professor LENTZ.

77. III. APPLIED GENERAL PATHOLOGY. — For seniors; juniors may elect. This course is a continuation of Course 76. Particular attention is given to the etiology, the pathogenesis and the prophylaxis of the communicable and non-communicable diseases of the different species of domesticated animals. Lectures and demonstrations.

5 class hours.

Credit, 5.
Assistant Professor LENTZ.

Prerequisites, Veterinary 75 or Veterinary 78, 79 and 80.

78. I. ESSENTIALS OF GENERAL PATHOLOGY. — For seniors; juniors may elect. Introduces students to some of the essential anatomical, histological and general physiological phenomena essential to the understanding of some of the simple general pathological conditions found in domestic animals. Some of the common methods of diagnosis are considered in the laboratory. The various chemical and biological reactions and tests are presented from the standpoint of pure science, showing applications of chemistry and biology. The course serves to educate liberally and stimulate in the student of agriculture the appreciation of some of the methods used in animal pathology for detecting and controlling some of the more common animal diseases. Lectures, demonstration and laboratory work.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

79. II. ESSENTIALS OF GENERAL ANIMAL PATHOLOGY. — For seniors; juniors may elect. A continuation of Course 78, devoted to a study of some of the common pathological conditions by means of prepared sections, the aim being to demon-

strate to the student abnormal animal histological structures commonly observed when material from various cases of animal diseases is prepared for microscopical study. Some of the biological products used in protecting animals against disease are considered.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 78.

80. **III. ESSENTIALS OF GENERAL ANIMAL PATHOLOGY.** — For seniors; juniors may elect. As stated in Courses 78 and 79.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 79.

85. **I. AVIAN PATHOLOGY.** — For seniors; juniors may elect. A course in poultry diseases. The object is to present information concerning the common diseases of poultry, their etiology, diagnosis and prevention. Consists of a systematic study of the diseases of the alimentary tract, liver and abdominal region, followed by a study of the diseases of the respiratory system, circulation and kidneys. The important disease-producing external and internal parasites are considered; also diseases of the skin and reproductive organs. Lectures and demonstrations.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

86. **II. AVIAN PATHOLOGY.** — For seniors; juniors may elect. As stated under Course 85, also devoted to the study of some of the special diseases of poultry. Recent methods used in the control of these diseases are considered an opportunity offered the student for demonstrating various disease processes by means of prepared slides. Lectures, demonstrations and laboratory work.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 85.

87. **III. AVIAN PATHOLOGY.** — For seniors; juniors may elect. As stated under Courses 85 and 86.

2 3-hour laboratory periods, credit, 3.
Professor GAGE.

Prerequisite, Veterinary 86.

Zoology and Geology.

Professor GORDON, Mr. GILBERT.

The facts and principles of the sciences of zoölogy and geology have important applications in industry and the arts, and with those of their sister sciences form a body of knowledge of value and interest with which the educated man finds it necessary to gain a close familiarity. The elective courses in this department stand as offerings to students who wish to supplement their work in other departments, or who, for any reason, wish to enlarge their knowledge in either zoölogy or geology. Students are encouraged to consult the department about any courses which may be available to them, and which might prove necessary or helpful for any line of work they may wish to follow.

The building occupied jointly by the department of entomology and the department of zoölogy and geology has for the work in zoölogy and geology laboratories equipped with gas, compound microscopes and the accessories needed for study in these subjects. The Zoölogical Museum has a representative collection of several thousand specimens of animals, and is drawn upon for material illustrating the various courses.

ZOÖLOGY.

Required Course.

26. **I. GENERAL PRINCIPLES OF ZOÖLOGY.** — For sophomores. An introductory course dealing with the basic features of animal structure, functions of organs, relations of animals to each other and some of the important principles and doctrines that have grown out of the study of animals.

2 class hours.

2 2-hour laboratory periods, credit, 4.

The DEPARTMENT.

Elective Courses.

50. **I. SYNOPTIC INVERTEBRATE ZOÖLOGY; THE ANNELIDS AND THE ARTHROPODS.** — For juniors; seniors may elect. A study of the classes and orders of the annelid worms and the arthropods, exclusive of insects.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

51. **II. SYNOPTIC INVERTEBRATE ZOÖLOGY; THE MOLLUSCS AND THE ECHINODERMS.** — For juniors; seniors may elect. A study of the classes and orders of the molluscs and echinoderms.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

52. **III. SYNOPTIC INVERTEBRATE ZOÖLOGY; MISCELLANEOUS INVERTEBRATE PHYLA.** — For juniors; seniors may elect. A study of various selected phyla of the non-vertebrated animals. For those who have not taken either or both of the preceding courses in synoptic invertebrate zoölogy this course may include representatives of the different phyla named therein.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

53. **I. ELEMENTS OF MICROSCOPIC TECHNIQUE.** — For juniors; seniors may elect. Gives the usual methods of preparing material for microscopic examination, including fixing, embedding, sectioning and differentiation by stains. May be supplemented by a study of selected normal tissues in connection with their physiological properties.

3 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

75. **I. SPECIAL ZOÖLOGY.** — Juniors, seniors and graduates may apply for such special work as they are qualified to undertake.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

76. **II. SPECIAL ZOÖLOGY.** — Same as Course 75.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

77. **III. SPECIAL ZOÖLOGY.** — Same as Course 75.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

79. **III. ORNITHOLOGY.** — For juniors; seniors may elect. The taxonomic characters, distribution and habits of birds.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoölogy 26.

GEOLOGY.

52. **III. GENERAL GEOLOGY.** — For juniors; seniors may elect. A course in the various aspects of physical geology, dealing with materials of the earth's crust; their nature, origin and arrangement and the changes which they undergo.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor GORDON.

DIVISION OF THE HUMANITIES.

Professor MACKIMMIE.

Economics and Sociology.

Professor MACKIMMIE.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

The courses in economics and sociology are planned with the purpose of giving the student that knowledge and understanding of the important factors and problems in this field of study and life which every active citizen and educated man ought to have.

Required Course.

25. **I. INTRODUCTION TO ECONOMIC PRINCIPLES AND PROBLEMS.** — For sophomores. For description of course see Course 50, **I**.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

Elective Courses.

26. **II. CIVILIZATIONS, ANCIENT AND MODERN.** — For sophomores; juniors and seniors may elect. The evolutionary origin and history of man; characteristics of primitive man, departure from the animal status and beginnings of civilization; origin and development of industries, arts and sciences; the evolution of languages, warfare, migrations and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern development; characteristic features of the leading civilizations and races of ancient and modern times; beneficial and dangerous factors in American life in view of the history of human civilization. Not given 1926-27.

5 class hours.

Credit, 5.

50. **I. INTRODUCTION TO ECONOMIC PRINCIPLES AND PROBLEMS.** — For juniors and seniors. Definitions of economic terms, such as wealth, capital, value, etc.; factors of production, exchange and consumption; principles of economic production, supply and demand, diminishing returns, division of labor, productive organization, concentration of capital and labor, trust and monopoly problems, public control of production and distribution; principles of exchange, theories of value, money and its problems; international trade, tariff and free trade theories, American merchant marine, reciprocity, and trade treaties; forms of income, wages, interest, rent, profits and the forces which govern them; principles of spending, economy, luxury, conservation of individual and national resources; principles and agencies for saving, investments, banks, building associations, insurance of all kinds; schemes for social organization; socialism, communism, industrial democracy. Textbook and readings.

5 class hours.

Credit, 5.

Professor MACKIMMIE,

51. **II. BUSINESS AND INDUSTRY.** — For juniors and seniors. The forms, organization, administration and labor problems of business. Methods of organizing, financing and administering corporations and partnerships; forms of business administration, wholesaling, jobbing, retailing, advertising, credits and collections; system of industrial remuneration for wage earners, co-operation and preserving industrial peace; problems concerned with protective legislation for workmen and employers, sweated industries, prison labor, child labor and industrial education.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

52. **III. PUBLIC FINANCE, TAXATION, MONEY AND BANKING.** — For juniors and seniors. Systems and problems of taxation as they are found in Europe and America; objects for spending public revenue; public debts and methods of organizing them; systems of money and currency problems of America; types, methods and functions of banks; economic and financial crises and depressions in the United States; modern war finance. Readings and lectures.

5 class hours.

Credit, 5.

Professor MACKIMMIE.

75. **I. SOCIAL INSTITUTIONS AND SOCIAL REFORMS.** — For seniors; juniors by permission. Social institutions, such as the family, the State, property, religions; and such current problems as eugenics, race suicide, divorce, crime and delinquent classes, prison reform, prevention and treatment of dependents and defectives, poverty, its causes and preventions; constructive modern social reform movements for insurance of wage earners, protection of childhood, assurance of safety, health and play time for all classes. The correctional and charitable institutions of Massachusetts are studied in considerable detail.

5 class hours.

Credit, 5.

History and Government.

Professor MACKIMMIE.

Required Courses.

25. **II. AMERICAN GOVERNMENT.** — For sophomores. A study of the structure and operation of the machinery of our government; also a study of the history of its development from its inception to the present day.

3 class hours.

Credit, 3.

27. **III. CITIZENSHIP.** — For sophomores. A course designed to acquaint the student with the most important and immediate problems of government — national, State and local — so that as a citizen he may make an intelligent contribution towards their solution. Lectures and discussions.

2 class hours.

Credit, 2.

Elective Courses.

50. **I. GOVERNMENT.** — For juniors and seniors. Forms and working methods of the government of Great Britain, Germany, France, Russia, Switzerland, New Zealand and Canada; historic types and theories of government; forms and methods of Federal, State and local governments in America; progress and problems of democracy and new reform movements in organization and administration; new tendencies towards social legislation and extension of governmental control.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

51. **II. MODERN EUROPEAN HISTORY.** — For juniors and seniors. The modern history of the principal countries of Europe, especially the great movements and revolutions that developed the nations up to the present generation.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. **III.** EUROPEAN HISTORY SINCE 1870. — For juniors and seniors. The Franco-Prussian War and the formation of the German Empire, the unification of Italy, the Third French Republic, European Expansion in the East, the Russo-Japanese War, and the origin, events and results of the War of 1914. While a continuation of Course 51, this course will be complete in itself, and may be elected by those who have had no history training. Its aim is to provide the basis for an understanding of present-day conditions, and for an intelligent participation in world affairs.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

Languages and Literature.

Professor PATTERSON, Professor ASHLEY, Professor JULIAN, Assistant Professor PRINCE, Assistant Professor RAND, Mr. NICHOLSON, Mr. HALLIDAY, Mr. DURKEE.

ENGLISH.

Required Courses.

1. **I.** 2. **II.** 3. **III.** ENGLISH. — For freshmen. Composition. Intended to teach straight thinking, sound structure, clear and correct expression. Lectures, recitations, theme writing and conferences.

3 class hours.

Credit, 3.

Professors PATTERSON, PRINCE, RAND and Mr. NICHOLSON.

25. **I.** 26. **II.** 27. **III.** ENGLISH. — For sophomores. A general reading course in English literature.

2 class hours.

Credit, 2.

Professor PATTERSON.

28. **I.** 29. **II.** 30. **III.** ENGLISH. — For sophomores. English composition, oral and written.

1 class hour.

Credit, 1.

Professors PATTERSON, PRINCE, RAND and Mr. NICHOLSON.

Elective Courses in English Language and Literature.

50. **I.** ENGLISH POETRY OF THE ROMANTIC PERIOD (1927-28). — Alternates with Course 53. For juniors; seniors may elect. A course in history, appreciation and understanding. Some of the writers studied are Gray, Goldsmith, Burns, Scott, Wordsworth, Coleridge, Byron, Keats and Shelley.

3 class hours.

Credit, 3.

Professor PATTERSON.

51. **II.** ENGLISH POETRY IN THE NINETEENTH CENTURY (1926-27). — Alternates with Course 54. For juniors; seniors may elect. In general, this course is like Course 50. Tennyson, Browning, Mrs. Browning, Arnold, Clough, the Rossettis, Morris, Swinburne and others.

3 class hours.

Credit, 3.

Professor PATTERSON.

57. **III.** ENGLISH POETRY IN THE NINETEENTH CENTURY (1926-27). — Alternates with Course 58. For juniors; seniors may elect. As stated under Course 51.

3 class hours.

Credit, 3.

Professor PATTERSON.

52. **III.** ENGLISH WRITERS FROM MILTON TO POPE. — For juniors; seniors may elect. A survey course that emphasizes the leading writers, literary currents and the thought of the period. Some of the writers studied are Milton, Dryden, Addison, Swift and Pope.

3 class hours.

Credit, 3.

Professor PATTERSON.

53. **I. ENGLISH PROSE OF THE ROMANTIC PERIOD (1926-27).** — For juniors; seniors may elect. A course in English prose paralleling Course 50. Some of the writers studied are Goldsmith, Coleridge, Lamb, DeQuincey and Hazlitt.
3 class hours.

Credit, 3.

Professor PATTERSON.

54. **II. ENGLISH PROSE IN THE NINETEENTH CENTURY (1927-28).** — For juniors; seniors may elect. Parallels Course 51. Among the writers considered will be Macaulay, Carlyle, Ruskin, Newman and Arnold.
3 class hours.

Credit, 3.

Professor PATTERSON.

58. **III. ENGLISH PROSE IN THE NINETEENTH CENTURY (1927-28).** — For juniors; seniors may elect. As stated under Course 54. Alternates with Course 57.
3 class hours.

Credit, 3.

Professor PATTERSON.

55. **II. AMERICAN LITERATURE.** — For juniors; seniors may elect. A course in the chief American prose writers; among those studied being Franklin, Brockden Brown, Irving, Cooper, Poe, Hawthorne, Emerson, Thoreau, Lowell, Holmes, Parkman.
3 class hours.

Credit, 3.

Assistant Professor PRINCE.

56. **III. AMERICAN LITERATURE.** — For juniors; seniors may elect. A course in the chief American poets; among those studied being Freneau, Bryant, Poe, Emerson, Longfellow, Whittier, Holmes, Lowell, Whitman, Lanier.
3 class hours.

Credit, 3.

Assistant Professor PRINCE.

60. **I. THE LITERATURE OF RURAL LIFE.** — For juniors; seniors may elect. A critical and appreciative study of writers, both in prose and poetry, who have interpreted nature from the viewpoint of the lover of country life, and those who have idealized agriculture, horticulture and other rural pursuits, together with those who have upheld as an ideal the development of a rural environment in cities.
3 class hours.

Credit, 3.

61. **II. THE LITERATURE OF RURAL LIFE.** — For juniors; seniors may elect. As stated under Course 60.
3 class hours.

Credit, 3.

Prerequisite, English 60.

65. **I. ADVANCED COMPOSITION.** — For juniors; seniors may elect. Advanced work in expository writing, based upon specimens by contemporary authors and upon the personal experience of the student. Particular attention is given to organization, diction and style.
3 class hours.

Credit, 3.

Assistant Professor RAND.

66. **II. ADVANCED COMPOSITION.** — For juniors; seniors may elect. The preparation of theses and similar manuscripts upon subjects selected by the student. The foundation of this course lies in an orderly accumulation of material followed by an intelligent and readable interpretation of its significance.
3 class hours.

Credit, 3.

Assistant Professor RAND.

67. **III. ADVANCED COMPOSITION.** — For juniors; seniors may elect. Work in journalistic and fictional narrative with supplementary reading.
3 class hours.

Credit, 3.

Assistant Professor RAND.

75. **III. PROSE FICTION.** — The short story or the novel. For seniors; juniors may elect. Readings, reports and discussions. Not offered in 1926-27.
3 class hours or library equivalents.

Credit, 3.

79. **II. SHAKESPEARE.** — For seniors; juniors may elect. A cursory survey of the origin and rise of English drama is followed by the reading of about fifteen of Shakespeare's plays, selected to indicate the evolution of the dramatist and to emphasize the various phases of his art. Every attempt is made to deepen the student's appreciation of the personalities to be found in the plays, and of the beauty of the many memorable poetic passages.
3 class hours.

Credit, 3.

Assistant Professor RAND.

80. **III. MODERN DRAMA.** — For seniors; juniors may elect. This course traces the development of English drama from the time of the Restoration to the present day. The purpose of the course is to impart an intelligent and sympathetic interest in the theatre of the Twentieth Century.
3 class hours.

Credit, 3.

Assistant Professor RAND.

PUBLIC SPEAKING.

Elective Courses.

50. **I. ARGUMENTATION.** — For juniors; seniors may elect. Presents the fundamental principles of argumentation as applied to oral and written discourse, and develops in the student power to handle argument convincingly and persuasively. Lectures, discussions of leading questions of the day, practice in brief-drawing and the writing of forensics. The course is recommended for those who desire to enter the intercollegiate debates.
3 class hours.

Credit, 3.

Assistant Professor PRINCE.

51. **III. OCCASIONAL ORATORY.** — For juniors; seniors may elect. A study of the principles and the practice of formal oratory; the preparation and delivery of one original oration; prescribed reading in oratory. The course is recommended for those who wish to enter the Flint Contest.
3 class hours.

Credit, 3.

Assistant Professor PRINCE.

French, Spanish and Music.

Professor ASHLEY, Mr. HALLIDAY.

The aim of the courses in French and Spanish is to give the student a practical knowledge of these languages for the purpose of wider reading and research, to introduce him to some of their treasures in art and science, and through the literature to acquaint him with the people. In the elementary courses as much time as possible is given to oral work, to develop a speaking, as well as a reading, knowledge of the tongue.

FRENCH.

Required Courses.

1. **I.** 2. **II.** 3. **III. ELEMENTARY FRENCH.** — For freshmen; sophomores, juniors and seniors may elect. The essentials of grammar are rapidly taught and will be accompanied by as much reading as possible. Required of freshmen

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presenting German for entrance who do not continue that language and have not studied French.
3 class hours.
P.D. 31.
-Credit, 3.
Professor ASHLEY.

4. **I.** 5. **II.** 6. **III.** INTERMEDIATE FRENCH. — For freshmen; sophomores, juniors and seniors may elect. Training for rapid reading. The reading of a number of short stories, novels and plays; composition, reports on collateral reading from periodicals and scientific texts in the library.
3 class hours.
Credit, 3.
Mr. HALLIDAY.

Prerequisite, required of freshmen who present two years of French for entrance and do not take German.

Elective Courses.

25. **I.** INTERMEDIATE FRENCH. — For sophomores; juniors and seniors may elect. Training for rapid reading; the reading of a number of short stories, novels and plays; readings from periodicals and scientific texts in the library.
3 class hours.
Credit, 3.
Mr. HALLIDAY.

Prerequisites, French 1, 2 and 3.

26. **II.** INTERMEDIATE FRENCH. — For sophomores; juniors and seniors may elect. As stated under Course 25.
3 class hours.
Credit, 3.
Mr. HALLIDAY.

Prerequisite, French 25.

27. **III.** INTERMEDIATE FRENCH. — For sophomores; juniors and seniors may elect. As stated under Course 25.
3 class hours.
Credit, 3.
Mr. HALLIDAY.

Prerequisite, French 26.

28. **I.** ADVANCED FRENCH. — For sophomores; juniors and seniors may elect. A reading course. Balzac's "Eugénie Brandet" and "Le Père Goriot," and other masterpieces of the nineteenth century; Brunetière's "Honoré de Balzac" and Harper's "Masters of French Literature," readings in the library and written reports.
3 class hours.
Credit, 3.
Professor ASHLEY.

Prerequisites, French 4, 5 and 6.

29. **II.** ADVANCED FRENCH. — For sophomores; juniors and seniors may elect. As stated under Course 28.
3 class hours.
Credit, 3.
Professor ASHLEY.

Prerequisites, French 4, 5 and 6.

30. **III.** ADVANCED FRENCH. — For sophomores; juniors and seniors may elect. General view of the history of French literature; Kastner and Atkins' "History of French Literature." Representative works of the important periods. Outside reading.
3 class hours.
Credit, 3.
Professor ASHLEY.

Prerequisites, French 25 and 26, or French 28 and 29.

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50. **I. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. Meets the requirements of individual students and equips them with exact English equivalents for the French scientific terms in their particular science. Word lists of scientific terms are required, and also weekly readings and reports from scientific works in the subject in which they are majoring. Several scientific works are read.

3 class hours.

Credit, 3.

Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

51. **II. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

52. **III. SCIENTIFIC FRENCH.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Mr. HALLIDAY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

75. **I. FRENCH LITERATURE.** — For seniors; juniors may elect. The object of Courses 75, 76 and 77 is to give an introduction to recent movements in French literature. Course 75 deals with the drama, and plays by Augier, A. Dumas *fils*, Delavigne and other contemporary dramatists.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

76. **II. FRENCH LITERATURE.** — For seniors; juniors may elect. The novel. Works by Flaubert, the De Goncourts and Zola are read. Written reports are required on outside reading.

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

77. **III. FRENCH LITERATURE.** — For seniors; juniors may elect. Modern criticism. Sainte-Beuve, "Causeries du Lundi" (Harper), and works by Taine and Renan. Reference book, Lanson's "Histoire de la Littérature Française."

2 class hours.

Credit, 2.

Professor ASHLEY.

Prerequisites, French 4, 5 and 6, or French 25, 26 and 27.

SPANISH.

Elective Courses.

50. **I. ELEMENTARY SPANISH.** — For juniors; seniors may elect. Open to other students upon arrangement. Grammar, with special drill in pronunciation; exercises in conversation and composition. Reading from a reader and selected short stories.

3 class hours.

Credit, 3.

Professor ASHLEY.

51. **II. ELEMENTARY SPANISH.** — For juniors; seniors may elect. As stated in Course 50.

3 class hours.

Credit, 3.

Professor ASHLEY.

Prerequisite, Spanish 50.

52. **III. ELEMENTARY SPANISH.** — For juniors; seniors may elect. As stated in Course 50. P.D. 31.
3 class hours. Credit, 3.

Professor ASHLEY.

Prerequisite, Spanish 51.

75. **I. MODERN SPANISH AUTHORS.** — For seniors. Reading from modern Spanish novel and drama. Translation of English into Spanish. Private reading. 2 class hours. Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 52.

76. **II. MODERN SPANISH AUTHORS.** — For seniors. As stated in Course 75. 2 class hours. Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 75.

77. **III. MODERN SPANISH AUTHORS.** — For seniors. As stated in Course 75. 2 class hours. Credit, 2.

Professor ASHLEY.

Prerequisite, Spanish 76.

MUSIC.

Elective Courses.

50. **I. HISTORY AND INTERPRETATION OF MUSIC.** — For juniors; seniors may elect. History of music among the ancients; medieval and secular music; epoch of vocal counterpoint; development of monophony opera and oratorio; life and works of the greatest representatives of the classical school, — Bach, Händel, Haydn, Gluck and Mozart. 1 class hour.

Credit, 1.

Professor ASHLEY.

51. **II. HISTORY AND INTERPRETATION OF MUSIC.** — For juniors; seniors may elect. A continuation of Course 50. The Romantic school; Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz and Liszt; Wagner and the opera. 1 class hour.

Credit, 1.

Professor ASHLEY.

52. **III. HISTORY AND INTERPRETATION OF MUSIC.** — For juniors; seniors may elect. The Modern school and Modern composers. 1 class hour.

Credit, 1.

Professor ASHLEY.

German.

Professor JULIAN, Mr. DURKEE.

GERMAN.

The courses in German are intended to give the student a reading knowledge of the language and to introduce to him some of the masterpieces of German literature. To the student interested in pursuing advanced reading in scientific German, opportunity is given to do corollary reading in his major subject, in collaboration with the head of that department.

Required Courses.

1. **I. 2. II. 3. III. ELEMENTARY GERMAN.** — For freshmen; sophomores, juniors and seniors may elect. Grammar, composition and reading. Especial attention is given to oral work in German and to translation of English into German. Required of those presenting French for entrance who do not continue that language and have not studied German. 3 class hours.

Credit, 3.

Mr. DURKEE.

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4. **I. 5. II. 6. III.** INTERMEDIATE GERMAN. — For freshmen; sophomores, juniors and seniors may elect. Selected works of Schiller, Heine and Goethe. Grammar review and advanced prose composition.

3 class hours.

Credit, 3.

Mr. DURKEE.

Prerequisite, required of freshmen who present two years of German for entrance and do not take French.

Elective Courses.

25. **I.** INTERMEDIATE GERMAN. — For sophomores; juniors and seniors may elect. Reading of such works as Sudermann's "Frau Sorge," "Wilhelm Tell," "Die Journalisten," etc. Grammar review.

3 class hours.

Credit, 3.

Mr. DURKEE.

Prerequisites, German 1, 2 and 3.

26. **II.** INTERMEDIATE GERMAN. — For sophomores; juniors and seniors may elect. As stated under Course 25.

3 class hours.

Credit, 3.

Mr. DURKEE.

Prerequisite, German 25.

27. **III.** INTERMEDIATE GERMAN. — For sophomores; juniors and seniors may elect. As stated under Course 25.

3 class hours.

Credit, 3.

Mr. DURKEE.

Prerequisite, German 26.

28. **I.** ADVANCED GERMAN. — For sophomores; juniors and seniors may elect. Reading and studying of Goethe's most important literary productions.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisites, German 4, 5 and 6.

29. **II.** ADVANCED GERMAN. — For sophomores; juniors and seniors may elect. Development of the German novel; rapid reading of great novelists.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 28.

30. **III.** ADVANCED GERMAN. — For sophomores; juniors and seniors may elect. As stated under Course 29.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 29.

50. **I.** SCIENTIFIC GERMAN. — For juniors; seniors may elect. Reading in German of modern magazine articles and works of a scientific nature. Different work assigned according to needs of individual students.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisites, German 4, 5 and 6, or German 25, 26 and 27.

51. **II.** SCIENTIFIC GERMAN. — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 50.

52. **III. SCIENTIFIC GERMAN.** — For juniors; seniors may elect. As stated under Course 50.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 51.

75. **I. GERMAN LITERATURE.** — For seniors. Advanced language and literary study. Conducted entirely in German. Lectures on German literature and history; life, customs and travel in Germany. Collateral readings, including masterpieces of different epochs, such as "Niebelungenlied," Goethe's "Faust" and one modern typical drama. Not offered 1926-27.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisites, German 28, 29 and 30.

76. **II. GERMAN LITERATURE.** — For seniors. As stated under Course 75.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 75.

77. **III. GERMAN LITERATURE.** — For seniors. As stated under Course 75.

3 class hours.

Credit, 3.

Professor JULIAN.

Prerequisite, German 76.

DIVISION OF RURAL SOCIAL SCIENCE.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Agricultural Economics.

Professor CANCE, Assistant Professor SAWTELLE, Miss FOLEY, Mr. SMART.

Instruction in agricultural economics is designed to show that the agricultural industry justified its existence chiefly as a supplier of food and raw textile materials for human consumption; that agricultural success is measured by production of values rather than by production of volume of agricultural products; that the goal of the farmer is the largest net profit over a long-time period; that agricultural production includes all processes from purchase of seed and fertilizer and preparation of seedbed until the product reaches the consumer, including collection, transportation, storage, financing, packing, handling and selling; that a knowledge of the business of agriculture and agricultural commerce is to-day more necessary than a knowledge of agricultural technique.

The work of this department is conducted by means of lectures, readings and research in both library and field. A catalogue, now containing some 12,000 cards, covering the various phases of agricultural economics, is maintained. The department is also supplied with a large collection of maps, charts and statistical reports on the prices and supply of agricultural products. A goodly number of regular reports of the Bureau of Markets and other divisions of the United States Department of Agriculture are available for the use of students. Two series of bound volumes of bulletins are kept in the department offices, with duplicate series in the college library; one series already contains 12 volumes on "Co-operation in Agriculture," and the other, 15 volumes on "Marketing of Farm Products."

Required Courses.

26. **II. AGRICULTURAL INDUSTRY AND RESOURCES.** — For sophomores. A descriptive course dealing with agriculture as an industry and its relation to physiography, movement of population, supply of labor, commercial development, transportation, public authority and consumers' demand. The principal agricultural resources of the United States are studied with reference to commer-

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cial importance, geographical distribution, present condition and means of increasing the value of the product and cheapening cost of production. Lectures, assigned readings, class topics and discussions.

4 class hours.

1 2-hour laboratory period, credit, 5.

Miss FOLEY.

Elective Courses.

50. **I. ELEMENTS OF AGRICULTURAL ECONOMICS.** — For juniors; seniors may elect. This course is designed to accompany or follow the course in elements of economics. It deals with the economic principles underlying the welfare and prosperity of the farmer and those institutions upon which his economic success depends; the economic elements in the production and distribution of agricultural wealth; means of exchange; problems of land tenure and land values; taxation of farm property; and the maintenance of the economics status of the farmer. Lectures, text, readings, topics and field work.

5 class hours.

Credit, 5.

Professor CANCE.

51. **III. THE EVOLUTION OF AGRICULTURE.** — For juniors; seniors may elect. A general survey of the evolution of the agricultural industry. Significant developments are traced and their causes and consequences studied. An attempt is made to give the student a knowledge of the changes which have taken place and which are taking place in the agricultural industry, the conditions which accompany these changes, and to furnish a basis by which the significance and the course of present and future developments in agriculture may be judged. Special emphasis will be placed on the development of agriculture in New England and the United States. Lectures, readings and library work.

5 class hours.

Credit, 5.

Assistant Professor SAWTELLE.

52. **II. CO-OPERATION IN AGRICULTURE.** — For juniors; seniors may elect. The history, principles and business relations of agricultural co-operation. (1) A survey of the development, methods and economic results of farmers' organizations and great co-operative movements; (2) the business organization of agriculture abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful co-operative endeavor among farmers, practical working plans for co-operative associations, with particular reference to purchase of supplies and the marketing of perishable products. Lectures, text, assigned readings and practical exercises.

5 class hours.

Credit, 5.

Professor CANCE.

53. **III. THE AGRICULTURAL MARKET.** — For juniors; seniors and graduate students may elect. A study of the forces and conditions which determine the prices of farm products and the mechanism, methods and problems concerned with transporting, storing and distributing them. Supply and demand, course of prices, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market and direct sales are taken up. The characteristics and possibilities of the New England market are given special attention. Lectures, readings, assigned studies and field work.

5 class hours.

Credit, 5.

Professor CANCE.

54. **III. ECONOMICS OF CONSUMPTION.** — For juniors and seniors; graduate students may elect. The purpose of this course is a consideration of the importance of consumption in modern industry and commerce; a classification of consumption wants; a survey of the sources of consumption goods, particularly food. This will be followed by a study of standards of living, the laws of consumption, and a discussion on the administration of income. Finally, a short study will be made of the relation of consumption to the problems of population and to the develop-

ment of the rural people. Lectures, assigned readings, and practical exercises. Offered for the year 1926-27.

3 class hours.

Credit, 3.

Professor CANCE and Miss FOLEY.

75. **II. RURAL AND BUSINESS LAW.** — For seniors; juniors may elect. Land, titles, public roads, rights incident to ownership of livestock, contracts, commercial paper and distinctions between personal and real property. Text, written exercises, lectures and class discussions.

5 class hours.

Credit, 5.

Mr. SMART.

76. **II. TRANSPORTATION OF AGRICULTURAL PRODUCTS.** — For seniors and graduate students; juniors may elect. The development of highway, waterway and railway transportation and its relation to the agricultural development of the country; the principles governing the operation and control of transportation agencies; present-day problems relating to the shipment of farm products, rates, facilities and services; methods of reducing wastes in transportation; the economics of the good roads movement and of motor transportation. Lectures, text and field work.

5 class hours.

Credit, 5.

Professor CANCE.

77. **I. PROBLEMS IN AGRICULTURAL ECONOMICS.** — For seniors and graduate students; juniors may elect. An advanced course for those desirous of studying more intensively some of the economic problems affecting the farmer and the production and distribution of the food supply. Current economic questions, agricultural legislation, government aids and subsidies, and causes affecting land valuations are some of the problems discussed. Particular attention will be given to economic problems relating to New England and to agricultural commerce. Students will be encouraged to pursue lines of individual interest.

5 class hours.

Credit, 5.

Professor CANCE.

78. **III. AGRICULTURAL CREDIT FACILITIES.** — For seniors and juniors. Lectures, discussions and assigned readings on credit needs of farmers; the legitimate use of credit in the acquisition of land, and the production, storage and marketing of agricultural products; the development of national and State rural credit institutions and laws; the powers and methods of operation of credit institutions with reference to the supply of credit for agricultural purposes; the methods by which the individual may increase his credit standing and borrowing power; ways in which the present credit facilities may be increased.

3 class hours.

Credit, 3.

Assistant Professor SAWTELLE.

79. **I. AGRICULTURAL STATISTICS.** — For seniors; juniors and graduate students may elect. The nature and sources of agricultural statistics, the methods of obtaining numerical facts, of analyzing and drawing conclusions from statistical data, and the methods of presenting in a true and forceful manner the statistical facts of the agricultural industry. Opportunity is given in the laboratory for practice in the use of statistical methods and processes, and to acquire experience in dealing with practical statistical problems. The application of statistics and statistical methods in the fields of agricultural economics, extension work, education, journalism and the business matters connected with farm operation is emphasized.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Assistant Professor SAWTELLE.

80. **I. SEMINAR.** — For seniors and graduate students. Research in agricultural economics and history; problems of New England agriculture. Library work and reports. If desirable some other topic may be substituted.

1 or 2 2-hour conference periods, credit, 1 or 2.

The DEPARTMENT.

81. **II. SEMINAR.** — For seniors and graduate students. As stated in Course 80.

1 or 2 2-hour conference periods, credit, 1 or 2.
The DEPARTMENT.

82. **III. SEMINAR.** — For seniors and graduate students. As stated in Course 80.

1 or 2 2-hour conference periods, credit, 1 or 2.
The DEPARTMENT.

83. **I. SALESMANSHIP OF AGRICULTURAL PRODUCTS.** — For seniors; juniors may elect. The course embraces a study of the principles and practices that are involved in the selling of goods and services. The application of these principles of salesmanship to the disposal of agricultural products is especially emphasized. Types of sales, motives for buying, securing interviews, types of prospects, preparation of sales talks, meeting objections and excuses, and sales demonstrations by students and the instructor are included.
2 class hours.

Credit, 2.
Miss FOLEY.

84. **III. ADVERTISING AGRICULTURAL PRODUCTS.** — For seniors; juniors may elect. A course dealing with the application of the principles of advertising to agricultural products. A study of the nature of advertising, the economics of advertising, the use of media, copy, psychology as applied to advertising, layout, the advertising campaign, advertising agency, etc., is made. The solution of practical problems to emphasize different phases of advertising is required by students.
2 class hours.

Credit, 2.
Miss FOLEY.

85. **II. AGRICULTURAL PRICES.** — For seniors and graduate students. A study of the prices of agricultural products and other commodities which are of importance in the agricultural industry. Limited to five students.

2 or 3 2-hour laboratory periods, credit, 2 or 3.
Assistant Professor SAWTELLE.

86. **III. AGRICULTURAL PRICES.** — For seniors and graduate students as stated in Course 85. Limited to five students.

2 or 3 2-hour laboratory periods, credit, 2 or 3.
Assistant Professor SAWTELLE.

87. **III. FOREIGN TRADE IN AGRICULTURAL PRODUCTS.** — For seniors and graduates; juniors may elect. A general course embracing a study of the principles and practices of international trade and the foreign commerce of the United States, particularly with reference to agricultural products. The development and present status of foreign trade in agricultural products, trade relations with foreign nations, the agencies and practices of foreign trade, foreign trade salesmanship and advertising, the status of New England with reference to foreign trade are some of the topics which will be presented. The work in the course will also include a personal study of special features of foreign trade and of the trade importance of specific subjects. Textbook, class discussions and class topics.
3 class hours.

Credit, 3.
Miss FOLEY.

88. **III. BUSINESS ACCOUNTING.** — For seniors; juniors may elect. This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis and interpretation of accounting data, and of the methods used in accounting and preparing the usual types of business statements. The managerial uses of accounting as a means of business control is the keynote of the course.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Admission by permission of the instructor only.

Agricultural Education.

Professor WELLES, Professor GLICK, Mr. HEALD.¹

The primary aim of the department is to train students for service in some form of educational work. Students desiring state approval as teachers of agriculture or related subjects should confer with the head of the department as early as possible to insure a desirable range of preparation, including farm experience, a part of which may be gained after entering college. They should also become acquainted with the State Agent for Agricultural Teacher-Training who approves candidates for positions in special schools and departments of agriculture in high schools. A Teacher-Training certificate will be awarded by the Vocational Educational Division to students who qualify as to farm experience, technical subjects, and educational courses as advised.

The department seeks to be of the greatest possible service to students who are prepared to teach and whose scholastic standing and qualifications generally seem to make them suitable candidates for positions. Students who major in other departments but expect to teach should consult this department regarding the educational courses best suited to their purposes.

The department recommends to the State Department of Education such graduates of the college as are entitled to receive the high school teachers' term certificate.

29. **II. PROBLEMS IN EDUCATION.** — For sophomores in the Division of Rural Social Science. The aim of this course is to introduce the student to the field of education through the study of the educational problems in the history of America from the beginning of the Colonial period to the present time. Such an understanding is desired in order that the citizens of tomorrow may be able to solve their own educational problems.
3 class hours.

Credit, 3.
Professor WELLES.

51. **I and II. PRINCIPLES AND METHODS OF TEACHING.** — For juniors; seniors may elect. This course is intended for students who expect to become teachers. Others must consult the head of the department before registering. Consists of a study of the general principles of teaching and school management applied to particular "cases" taken from actual experience in public school work. Discussion of the rational solutions of these "cases" tend to fix the ideas in methods. Certain assigned and optional readings are required. These are both technical and inspirational in character and cover the best there is printed on the subject of methods of teaching. They are supported by sharp class discussions of the main issues. Observation visits to schools in session are required with full reports. Exercises in teaching under supervision are also required with criticism and discussion of methods and results. A good text is used as the basis of the course.
5 class hours.

Credit, 5.
Professor WELLES.

52. **I. HISTORY AND PHILOSOPHY OF EDUCATION.** — For seniors and graduate students; juniors may elect. A general course in the history of educational theory and practice. Special emphasis is placed upon the philosophical background of education.
5 class hours.

Credit, 5.
Professor GLICK.

55. **I and II. GENERAL PSYCHOLOGY.** — For juniors; seniors and graduate students may elect. This is an introductory course for those anticipating further study in psychology as well as a practical and cultural course for those who can take only one course in this field. It deals with the fundamental principles of psychology and their application to the understanding and control of human thought and action.
5 class hours.

Credit, 5.
Professor GLICK.

¹ State Agent for Agricultural Teacher-Training representing the State Department of Education in the administration of vocational education acts.

56. **II and III. EDUCATIONAL PSYCHOLOGY.** — For juniors; seniors and graduate students may elect. It is a direct application of psychology to the field of education and is a basic course for both general and specific methods. The course deals with the original nature of the child, the psychology of learning, individual differences, transfer of training, mental tests, etc. Intended primarily for prospective teachers, but open to others who are sufficiently interested.
5 class hours.

Credit, 5.

Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

75. **II. PRINCIPLES OF SECONDARY EDUCATION.** — For seniors; juniors may elect. This is a study of the American high school. It is designed to acquaint the student with the aims of high school education, the characteristics and tendencies of high school students, the high school curriculum, extra-curricular activities and the best ideas in regard to the administration of high schools.
3 class hours.

Credit, 3.

Professor WELLES.

76. **I and III. SPECIAL METHODS IN TEACHING AGRICULTURE AND RELATED SCIENCE.** — For seniors; juniors and others qualified may elect. Owing to the specialized nature of this course, the head of the department must be consulted before registration. The course aims to set out clearly the main details in teaching agriculture and related science from a vocational point of view. The home project is considered the basis. The work covers material and method, laws, policies, state requirements, common practices, teachers' subject and method outlines, project outlines, lesson plans, moot class teaching, observation, references, weekly oral and written reports, etc. The principle of job analysis is employed throughout the course.
5 class hours.

Credit, 5.

Professor WELLES.

77. **III. METHODS IN EXTENSION TEACHING.** — For seniors; juniors and others qualified may elect. Candidates must consult the head of the department before registering. The course deals with various phases of extension work and the methods by which this work is accomplished. The specific lines are those of the county agent, boys' and girls' club leader, county demonstration agent and agricultural specialist. The different phases of the work will be discussed by members of the Extension staff who are specialists in their particular lines. The course will be offered jointly by the Extension Service and the department of Agricultural Education.
3 class hours.

Credit, 3.

Professor WELLES and EXTENSION SERVICE STAFF.

79. **III. TESTS AND MEASUREMENTS.** — Limited to fifteen seniors majoring in the department. A study of the development, theory and construction of the various types of tests and measurements with special emphasis upon their use in the schools. Practice is given in the administration and scoring of tests. Modern statistical methods are applied to the interpretation of the results.
2 class hours.

2 laboratory hours, credit, 3.

Professor GLICK.

80. **I, II and III. SUPERVISED TEACHING.** — (Includes: (a) apprentice, (b) practice and (c) observation teaching.) Primarily for seniors; juniors and others qualified may be admitted by arrangement. Under certain conditions a student may absent himself from college during one term of his junior or senior year for apprentice teaching in agriculture. For detailed information, consult the head of the department.

Opportunities for practice teaching in all other lines of work are sought on the campus and in nearby high schools. A limited amount of study of teaching by observation is permissible. Each student is required to pursue a course of pro-

essional reading bearing upon the subject he is teaching or observing. The amount of credit depends upon the number, character and length of teaching or observation exercises and conferences. Scheduled by arrangement.

Credit, 1 to 5.
The DEPARTMENT.

81. **III. SEMINAR IN METHODS OF TEACHING.** — Open to seniors majoring in Agricultural Education; graduate students and others by arrangement. This is an opportunity for those definitely intending to teach to make further studies in special lines other than agriculture, which is provided for in Agricultural Education 76. These include methods in college teaching, special methods in science, etc.

1 2-hour conference period, credit, 2.
Professor WELLES.

Prerequisites, Agricultural Education 51 and 56 or equivalents.

83. **III. SEMINAR IN APPLIED PSYCHOLOGY.** — For seniors and graduate students. Intended for those who desire to study the application of psychology in special fields such as salesmanship, advertising, medicine, law, public office, extension work, education, business, etc.

1 2-hour conference period, credit, 2.
Professor GLICK.

Prerequisites, Agricultural Education 55 and 56 or 85.

85. **I. VOCATIONAL PSYCHOLOGY.** — For seniors and graduate students. An application of psychology to the various fields of thought and action other than education.

3 class hours.

Credit, 3.
Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

95. **II. MODERN PHILOSOPHY OF EDUCATION.** — For seniors and graduate students; juniors may elect. A general survey of modern philosophical theories and tendencies with special emphasis upon their influence in determining present educational objectives and procedures. An analysis of the theories underlying various national cultures and ideals and the significance of education in realizing definite educational objectives. Emphasis is placed upon the significance of curriculums in realizing definite educational objectives.

3 class hours.

Credit, 3.
Professor GLICK.

Prerequisite, Agricultural Education 52 or consent of instructor.

Rural Sociology.

Assistant Professor CUTLER.

The courses in rural sociology are designed for two purposes: first, to give students an appreciation of the general problems of country life; second, to afford a definite training for students who wish to take up some specific form of social service. In the last ten years rural sociology has been introduced as a subject into more than 50 per cent of the agricultural schools and colleges. There is a good demand for teachers, and an increasing opportunity in other directions in this subject. The courses afford the student an opportunity to pursue graduate as well as undergraduate work. The library of the college is unusually well equipped with rural sociological material.

Required Course.

27. **III. ELEMENTS OF RURAL SOCIOLOGY.** — For sophomores. A broad survey of the field of rural sociology, including such topics as the origin of rural sociology, its methods and problems; relation of sociological to the scientific and technical

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aspects of agricultural problems; the development of the rural community in New England and the west, religious, educational and social ideals of rural people; characteristics and influence of the rural environment, the movement of the rural population, the effects of immigration; rural institutions, the school, the church, local government, effects of modern conditions of life on rural institutions; rural organization; problems of progress, an analysis of the needs of rural life in its further development. Lectures, readings and essays on assigned topics.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Elective Courses.

50. **I. RURAL VILLAGE AND TOWN SOCIOLOGY.** — For juniors; seniors may elect. Village history and evolution; present status and importance of the small town; its relation to farm and city; institutional, economic, social, cultural and moral aspects; the problems of citizenship, organization and leadership presented by the small town; schemes for improvement criticized and evaluated. This course has special value for New Englanders who wish to understand their semi-urban and town communities. Lectures, discussions and topical reports.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

51. **II. RURAL GOVERNMENT.** — For juniors; seniors may elect. A general survey of the development of rural government in the United States, origin of the New England town, its influence upon the west, county government, the influence of the farmer in legislation, good roads movement, credit facilities, taxation, boards of agriculture, agricultural colleges and experiment stations in relation to rural welfare; national government; a general survey of political organizations and movements among farmers in the United States and foreign countries and their influence in shaping legislation; relation of the Department of Agriculture, postal system, the various national commissions and agencies to rural welfare. Lectures, readings, written exercises on assigned topics.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

52. **III. RURAL ORGANIZATION.** — For juniors; seniors may elect. A study of the organized agencies by which rural communities carry on their various forms of associated life, particularly a study of the ways by which the domestic, economic, cultural, religious and political institutions contribute to rural betterment; principles underlying leadership, qualifications of the paid leader and the lay leader; the field of rural social service, national, State and local, preparation and opportunity for service; rural community building, a study of organized ways and means by which aid is given local communities. The method, scope and history of local, State and national associations formed about some farm product, their influence in forming class consciousness and in shaping agrarian legislation; need of federation. Lectures, readings and essays on assigned topics.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

76. **I. FIELD WORK IN RURAL SOCIOLOGY.** — For seniors; juniors may elect. Designed to meet the needs of students who wish to do some constructive work in rural social service while still in college. The work is carried on in co-operation with the various college agencies engaged in rural service. Any project for which credit in this course is to be asked must first have the approval of the head of the department.

2 to 6 laboratory hours, credits, 1 to 3.

Assistant Professor CUTLER.

Prerequisites, Rural Sociology 27 and preferably 50 or 52.

77. **II. RURAL SOCIAL RESEARCH AND SURVEYS.** — For seniors; juniors may elect. A careful study is made of the scientific method as applied to social problems, the technique of investigation and research; the procedure of gathering

sociological data by means of the survey; the interpretation and graphic presentation of statistical facts. This course is indispensable for those contemplating any kind of social work. Text, lectures and laboratory work.
3 class hours.

Credit, 3.

Assistant Professor CUTLER.

79. **I. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.

Assistant Professor CUTLER.

80. **II. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.

Assistant Professor CUTLER.

81. **III. SEMINAR.** — Enrollment is open to seniors, students majoring in rural sociology and others especially prepared.
1 to 3 class hours.

Credit, 1 to 3.

Assistant Professor CUTLER.

Rural Home Life.

Professor SKINNER, Assistant Professor KNOWLTON, Assistant Professor TUCKER.

The emphasis of the work in Home Economics is upon home making as a fundamental vocation. To this end, not only technical courses are offered, but also those which will tend to give the student a better understanding of the place which the home should take as a factor in community life, and a sympathetic attitude toward the problems of everyday life.

The work is largely prescribed in the first two years and gives the necessary basis for the development of courses in Home Economics during the junior and senior years. It is possible for graduates of this course, if they have skillfully chosen their electives in the field of agriculture or horticulture, to engage in home industries for profit and to engage in certain phases of professional work in the field of Home Economics.

The food laboratory located in Fernald Hall is fitted with individual cabinets and gas stoves. Provision is made for practice in the preparation and serving of meals with the family as a unit. The clothing laboratory located in Stockbridge Hall is provided with modern equipment. The related science is given in the laboratories of the various departments of the college.

1. **I. INTRODUCTION TO HOME ECONOMICS.** — For freshmen. Lectures on the history and evolution of the home; social customs and their value in family relationships; healthful and suitable care of the wardrobe; principles of nutrition as applied to the student's life; the student's budget, and the keeping of personal accounts.
2 class hours.

Credit, 2.

Miss SKINNER.

28. **I. 29. II. CLOTHING AND TEXTILES.** — For sophomores. A study of the selection and purchase of suitable materials, their character and cost; appropriateness and simplicity in dress. Practical laboratory work includes designing and drafting of patterns, the use of commercial patterns, and the making and repairing of garments.
1 class hour.

3 2-hour laboratory periods, credit, 4.

Miss TUCKER.

32. **III. APPLIED DESIGN.** — For sophomores. The application of the principles of design to specific problems of everyday life, using various media for their execution.

3 2-hour laboratory periods, credit, 3.

Miss TUCKER.

50. **I. FOODS.** — For juniors. A study of foods in their scientific and economic aspects, with the preparation of simple breakfasts and luncheons.

2 class hours.

3 2-hour laboratory periods, credit, 5.

MISS KNOWLTON.

51. **II. FOODS.** — For juniors. A further study of foods on the basis of meal planning in the home, with especial emphasis on dinners and the day's meals as a whole.

2 class hours.

2 3-hour laboratory periods, credit, 5.

MISS KNOWLTON.

52. **III. DIETETICS.** — For juniors. A study of the food requirement throughout infancy, childhood, adolescence, adult life and old age, considering the energy value of foods and the nutritive properties of foodstuffs. Typical dietaries are planned for each period, with special regard to economic and social conditions.

2 class hours.

2 3-hour laboratory periods, credit, 5.

MISS KNOWLTON.

56. **I. CLOTHING.** — For juniors. This course aims to develop initiative, independence and art in designing garments for figures of different types, with special emphasis on proportion, color and texture. Laboratory work will be concerned with more difficult problems of garment construction.

2 class hours.

3 2-hour laboratory periods, credit, 5.

MISS TUCKER.

61. **III. HOUSE FURNISHING.** — For juniors. A study of the fundamental principles of furnishing a moderate-sized home from an æsthetic and an economic standpoint.

2 class hours.

1 2-hour laboratory period, credit, 3.

MISS TUCKER.

76. **I. HOME MANAGEMENT.** — For seniors. The application of the principles of scientific management to the household, and the elements of successful home making. The family income, cost of living, household accounts, the budget and its apportionment. The responsibility of the woman to her family and the community in establishing right standards of living.

4 class hours.

Credit, 4.

MISS SKINNER.

78. **II. HOME NURSING.** — For seniors. A study of the care of the family health; simple diseases and their prevention; the care of young children and invalids; first aid to the injured.

3 class hours.

Credit, 3.

MISS SKINNER.

81. **I. THE COMMUNITY OF THE HOME ECONOMICS GRADUATE.** — For seniors. This course is intended to be a practical application of Home Economics to the various social, economic, industrial and educational problems relating to the home which the Home Economics graduate may meet in any community, either as an employed worker or as a volunteer. This may include a field trip to Boston and other centers at an estimated cost of ten dollars. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

MISS KNOWLTON.

82. **II. HEALTH EDUCATION.** — For seniors. This course is intended to show how the Home Economics graduate fits into the health program of the school, either as a teacher or as volunteer worker. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

MISS KNOWLTON.

83. **III. FIELD PROBLEMS UNDER SUPERVISION.** — For seniors. This course is intended to be a more intensive application of Home Economics to special community problems and to serve as a beginning of simple research work. Recommended only to those pursuing a major in Home Economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

84. **III. MILLINERY.** — For seniors. This course considers different types of hats, their appropriateness and becomingness, with practical work in designing frames, remodeling commercial frames, covering, trimming and renovating hats. Not given 1926-27.

3 2-hour laboratory periods, credit, 3.

GENERAL DEPARTMENTS.

[Heavy-faced type indicates the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

Military Science and Tactics.

Major N. BUTLER BRISCOE, Cav. (D. O. L.), U. S. A.; Captain DWIGHT HUGHES, Jr., Cav. (D. O. L.), U. S. A.; Captain EDWIN M. SUMNER, Cav. (D. O. L.), U. S. A.; Technical Sergeant JOHN J. LEE, U. S. A., Retired; Technical Sergeant JAMES A. WARREN, Cav. (D. E. M. L.), U. S. A.; and a detachment of enlisted men of the United States Army.

Under act of Congress (July 2, 1862) military instruction under a regular army officer was required in this college of all able-bodied male students. Under act of Congress June 3, 1916, as amended by act of Congress Sept. 8, 1916, there was established at this college in April, 1917, an infantry unit of the Reserve Officers' Training Corps. Following the World War and an act of Congress (July 9, 1918) the Reserve Officers' Training Corps is in operation under the regulation of the War Department, administered by the president of the college and the professor of military science and tactics.

Beginning with the fall term, 1920-21, the infantry unit of the Reserve Officers' Training Corps was converted into a cavalry unit.

The primary object of the Reserve Officers' Training Corps is to provide systematic military training at civil educational institutions, for the ultimate purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time the students are pursuing their general or professional studies, with the least practicable interference with their civil careers, by employing methods designed to fit men physically, mentally and morally for pursuits of peace as well as war.

All male candidates for a degree in a four-year course must take for two years at least three hours a week of military training.

Students in their junior and senior years, who are approved by the president and the professor of military science and tactics, may take the advanced course if they so elect. The advanced course consists of at least five hours per week and a summer camp of about six weeks during the summer vacation, between the junior and senior years. Students taking this course are paid by the Federal government at a rate to be fixed by the Secretary of War, not to exceed the value of the army ration. The rate now fixed is 30 cents per day, which amounts to about \$103 per year. Students graduating in the advanced course are eligible for commissions in the Officers' Reserve Corps, *but are not required to accept such commissions if offered.*

The uniform furnished to Freshmen and Sophomore (Basic Class) is of Olive Drab Woolen cloth, and is supplied by the Federal Government without cost. The uniforms for the Junior and Senior (Advanced Class) are of Forest Green Woolen cloth fitted and especially made for the individual student. It is expected that eventually this uniform will be furnished for the Basic Class also. This uniform is also furnished without cost to the student.

The course for cavalry units of the Reserve Officers' Training Corps includes theoretical and practical instruction in all phases of cavalry work, so distributed over the four-year college course as to qualify students at the end of the fresh-

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man year as privates of cavalry; at the end of the sophomore year as non-commissioned officers of cavalry; and upon graduation as reserve officers. The instruction in this department covers cavalry drill, cavalry weapons, — *i.e.*, rifle, pistol, saber, automatic rifle and machine gun, — map reading and military sketching, minor tactics, equitation, etc. The course in equitation includes cross-country riding and instruction in polo. So far as season and weather permit, instruction is of a practical nature out of doors.

Required Courses.

1. **I.** 2. **II.** 3. **III.** For freshmen. Theoretical and practical instruction in courtesy and discipline, riding and drills, rifle marksmanship, cavalry equipment and arms, physical training, history, dismounted sports.

3 scheduled hours, credit, 2.

Professor BRISCOE and ASSISTANTS.

25. **I.** 26. **II.** 27. **III.** For sophomores. Theoretical and practical instruction in leadership, map reading and map making, hygiene, sanitation, and first aid, cavalry equipment and arms, pistol marksmanship, riding and drill, mounted sports.

3 scheduled hours, credit, 2.

Professor BRISCOE and ASSISTANTS.

50. **I.** 51. **II.** 52. **III.** For juniors. Cavalry drill and riding, leadership and command, engineering (bridges, explosives), cavalry equipment and arms, selection and care of horses and mules, communications (telephone, telegraph, radio), mounted sports, jumping, polo.

5 scheduled hours, credit, 4.

Professor BRISCOE and ASSISTANTS.

75. **I.** 76. **II.** 77. **III.** For seniors. Transportation (wagon and pack), correspondence and records, law, leadership and command, drill and riding, history, mounted sports, competitions, horse show preparation and management, polo, cross-country riding.

5 scheduled hours, credit, 4.

Professor BRISCOE and ASSISTANTS.

Physical Education and Hygiene.

Professor HICKS, Professor GORE, MRS. HICKS, Mr. BALL, Mr. DERBY, Mr. COURIG.

The purpose of the courses offered by this department is to provide active exercise and to instruct every student how to care for his health and maintain his physical condition while carrying on his college course.

The equipment consists of the Alumni Athletic Field, which has room for two football fields, a quarter-mile cinder track with a 220 straightaway, and the baseball diamond; and also the old field for class football and baseball, two tennis courts, and the drill hall floor for basket ball. For several years the drill hall floor was used for class work in gymnastics, but its condition has become so bad that this has been discontinued. During the winter months a hockey rink is provided on the college pond.

[All undergraduate male students are given a physical examination upon entering.]

MEN.

Required Courses.

1. **I.** **HYGIENE.** — For freshmen. Lectures on personal hygiene.
1 class hour.

Credit, 1.

Professor HICKS.

2. **I.** **RECREATION.** — For freshmen. Outdoor games.

2 laboratory hours, credit, 1.

The DEPARTMENT.

3. **III.** RECREATION. — For freshmen. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
7. **I.** 8. **II.** 9. **III.** RECREATION. — Military substitute for freshman men.
3 scheduled hours, credit, 2.
The DEPARTMENT.
25. **I.** RECREATION. — For sophomores. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
26. **III.** RECREATION. — For sophomores. Outdoor games.
2 laboratory hours, credit, 1.
The DEPARTMENT.
30. **I.** 31. **II.** 32. **III.** RECREATION. — Military substitute for sophomore men.
3 scheduled hours, credit, 2.
The DEPARTMENT.

Elective Course.

77. **III.** TRAINING COURSE. — For seniors. Election by permission only.
History of physical education and supervision of athletics.
2 class hours.
Credit, 2.
Professor HICKS.

WOMEN.

Required Courses.

4. **I.** RECREATION. — For freshmen. Outdoor games.
3 scheduled hours, credit, 2.
Mrs. HICKS.
5. **II.** GYMNASTICS. — For freshmen. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
6. **III.** RECREATION. — For freshmen. Outdoor games.
3 scheduled hours, credit, 2.
Mrs. HICKS.
27. **I.** RECREATION. — For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.
28. **II.** GYMNASTICS. — For sophomores. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
29. **III.** RECREATION. — For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.

Elective Courses.

50. **II.** GYMNASTICS. — For juniors. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.
76. **II.** GYMNASTICS. — For seniors. Dancing, Swedish games, etc.
3 scheduled hours, credit, 2.
Mrs. HICKS.

THE LIBRARY.

The general college library consists of all books belonging to the College, including the Experiment Station and department libraries. A catalogue is maintained in the main building which lists all books and periodicals belonging to the College, not only in the main library, but in all branches or department libraries. The library now includes about 77,000 bound books, together with a great number of unbound books, pamphlets, magazines, and so forth; this more ephemeral literature in many cases is of great value for research, and is made readily available by indexes of many sorts.

Works pertaining to agriculture and related sciences are of course the larger part of the collection, but the library is also well supplied with works in literature, history and sociology. The reading room contains a good collection of encyclopedias and general reference books, and the list of periodicals numbers nearly seven hundred, and covers many magazines of general and popular sorts as well as the leading American and foreign publications.

The library is open during terms from 8 A.M. to 10 P.M. daily, and from 10 A.M. to 1 P.M. Sundays, with shorter hours during vacations. Visitors are always welcome, and are gladly aided in any problems of research along the lines taught in the College.

THE GRADUATE SCHOOL.

EDWARD M. LEWIS, A.M., President of the College.

CHARLES E. MARSHALL, Ph.D., Director of the Graduate School and Professor of Microbiology.

GRADUATE STAFF, 1926-1927.

President LEWIS, Director MARSHALL, Professors ALEXANDER, BEAUMONT, BRADLEY, CANCE, CHAMBERLAIN, CLARK, CRAMPTON, FERNALD, FOORD, FRANDSEN, GLICK, GRAHAM, HASKELL, LINDSEY, OSMUN, PETERS, SEARS, SEREX, SHAW, THAYER, TORREY, WAUGH, WELLES; Mr. HAWLEY, Secretary.

HISTORY AND AIMS.

This college has provided study of a graduate nature for many years. The need for such training became real when agriculture was recognized as an aggregate of the many sciences involved and the many practices employed. The obsolete notion that agriculture is only farming has been replaced by the notion that farming, as such, is only one element in agriculture. The ramifications and divisions of agriculture are many; most of these call for advanced study and training to meet the exigencies of the times. No apology is, therefore, required for an attempt to fathom the scientific, economic and social intricacies of such a fundamental phase of human effort as agriculture. The value of such an undertaking is, or should be, patent to every intelligent mind familiar with the situation.

Graduate work has been available to students since 1893. At that time it was possible to qualify for the degree of master of science; later, in 1898, for the degree of doctor of philosophy; in 1913, for the professional degrees of master of agriculture and doctor of agriculture; in 1916, for the specific professional degree of master of landscape architecture.

To make the graduate work more effective and distinctive in agriculture, the graduate school was established in 1908. It has become the operating agency for the purpose of fitting graduates of this and other institutions for teaching in colleges, high schools and other public schools; for positions as government, State and experiment station specialists in farm management, dairying, livestock husbandry, poultry science, agronomy, landscape gardening, pomology, vegetable gardening and floriculture; for positions as bacteriologists, botanists, chemists, entomologists; for economists and social workers; and for numerous other positions requiring a great amount of scientific and professional agricultural knowledge, training and experience.

ORGANIZATION.

The school is based upon the department as the unit, and the apprenticeship system as the most effective means of instruction. This gives to the student individuality in treatment and an intimacy with actual conditions of work and operations. The student is assigned to an advisory committee, composed of the instructor in charge of his major subject as chairman, and instructors in charge of his minor subjects as members, which directs his graduate studies. The chairmen of all these committees together constitute the graduate staff, which controls the policy of the graduate school.

ADMISSION.

Admission to the graduate school will be granted:—

1. To graduates of the Massachusetts Agricultural College.
2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this college.

In case an applicant presents his diploma from an institution of good standing, but has not, as an undergraduate, taken as much of the subject he selects for his major as is required of undergraduates at the Massachusetts Agricultural College, he will be required to make up such parts of the undergraduate work in that subject as the instructor in charge may consider necessary. He shall do this without credit toward his advanced degree.

Admission to the graduate school does not necessarily admit to candidacy for an advanced degree, — students holding a bachelor's degree being in some cases permitted to take graduate work without becoming candidates for higher degrees.

Applications for membership in the graduate school should be presented to the director of the school. Full statements of the applicant's previous training, of the graduate work desired, and of the amount and kind of work already done by him as an undergraduate should be submitted, together with a statement whether the applicant desires to work for a degree.

Registration is required of all students taking graduate courses, the first registration being permitted only after the student has received an authorization card from the director.

NATURE, METHODS AND REQUIREMENTS OF GRADUATE WORK.

Graduate work differs from undergraduate work in its purposes and methods. The primary aims of the instructor are emphasized in an attempt to have the student adjust himself and place himself in his environment; develop the rule of self-direction and self-instruction; acquire the power of accurate reasoning; gain proficiency and skill in his selected field of study or practice; and obtain an appreciative and discriminative insight into experimentation and original research. Methods are not devised, therefore, for attractiveness, entertainment and superficial reviews, but for the creation of initiative and profound thought, thorough acquaintance with detail, independent advance and industrious habits. Careful readings, lectures, conferences, surveys, laboratory exercises and field work are some of the agencies utilized.

All members of the graduate school are required to attend the course of lectures designed to supplement the technical work of all graduate studies. These lectures will be given once each week, and the students will be held responsible for the work.

Candidates for the degree of doctor of philosophy are required to prosecute three subjects, one of which shall be designated as the major and the others as minors. No two of these subjects may be taken in the same department. An original thesis shall be considered a part of the major subject.

Candidates for the degree of doctor of agriculture are required to select a major and such other subjects as will develop the major in its greatest intensity and comprehensiveness. Successful experience is also requisite, together with a thesis which represents a masterly survey or intimate study through accurate application of some phase of the major subject.

Candidates for the degree of master of science are required to prosecute two subjects, one of which shall be designated as a major and the other as a minor. When desirable, and approved by the Director, the minor may be made up of subjects from more than one department. The major and minor subjects may not be selected in the same department. An original thesis is considered a part of the major subject.

Candidates for the degree of master of agriculture are allowed greater privileges in the selection of subjects, but will be required to select a major and such other supporting lines of study as will be necessary to equip the individual professionally. A thesis which will reveal the professional training of the individual will be required.

Candidates for the degree of master of landscape architecture will be expected to conform to the established courses of the department, and to the requirements of the department in the preparation of a thesis, as well as in actual experience outside the college.

Candidates for membership in the graduate school who do not desire to work for a degree may, with the approval of the director of the school, take more than one subject in the same department, or pursue work in several departments, if their preparation will permit. A statement of the subjects chosen must in each case be submitted to the director of the graduate school for approval. The chosen subjects must bear an appropriate relation to each other.

A working knowledge of French and German is essential to successful graduate work, and students not having this will find it necessary to acquire it as soon as possible after entering. Other modern languages may be substituted if considered more valuable.

The graduate staff reserves the privilege of recommending and allowing courses in other institutions as a part of residence instruction. Such supervision will be exercised and credit granted as are essential to the highest standards of efficiency.

THESES.

A thesis is required of each candidate for an advanced degree. It must be on a topic belonging to the candidate's major subject; must show that its writer possesses the ability to carry on constructive study; must be an actual contribution to knowledge; and possess real merit.

The thesis in its final form must be submitted to the director by May 15 of the year in which the student is to present himself for the advanced degree, and before he may take the required examination. Three complete copies are required. One of the copies is to be retained as an official copy by the director, one is to be deposited in the college library, and the third is to be retained by the department in which the thesis was prepared. The candidate for the doctor's degree must be prepared to defend at the oral examination the views presented in his thesis.

FINAL EXAMINATIONS.

For the degree of doctor of philosophy or doctor of agriculture, final examinations on the minors taken are given upon the completion of the subjects. In the major subject, a written examination, if successfully passed, is followed by an oral examination in the presence of the graduate staff.

For the degree of master of science, master of agriculture or master of landscape architecture, a final examination upon the minor taken is given upon the completion of each course, and in the major a final examination, which may be either written or oral, or both, is given over all the work by the department concerned.

DEGREES CONFERRED.

The degrees of doctor of philosophy and doctor of agriculture are conferred upon graduate students who have met the following requirements:—

1. The devotion of at least three years¹ to the prosecution of three subjects of study and research in residence at the college.
2. The earning of not less than one hundred credits in the chief or major subject, and of not less than twenty-five credits in each of two minor subjects.
3. The preparation of a thesis, in the major subject, constituting an actual contribution to knowledge and accompanied by drawings if necessary. For the degree of doctor of agriculture the thesis may be modified to meet professional requirements.
4. The passing of final examinations, in both the major and minor subjects, to the satisfaction of the instructors in charge.

¹ All time statements refer to minimum time.

5. A public oral examination.

6. The payment of all fees and college expenses required.

The degrees of master of science, master of agriculture and master of landscape architecture are conferred upon graduate students who have met the following requirements:—

1. The devotion of at least one year and a half to the prosecution of study in two subjects of study and research, not less than one full college year of which must be in residence. In the case of a master of landscape architecture the student must follow the prescribed course of study.

2. The earning of not less than fifty credits in the chief or major subject, and of not less than twenty-five credits in the minor subject. Students pursuing the course in landscape architecture will devote all of their time to the established course, and meet the conditions of one year of experience outside the college.

3. The preparation of a thesis in the major subject, constituting an actual contribution to knowledge, and accompanied by drawings if necessary.

4. The passing of final examinations, in both major and minor subjects, to the satisfaction of the professors in charge.

5. The payment of all fees and college expenses required.

The fee for the degree of master of science, master of agriculture, or master of landscape architecture is \$10, and for the degree of doctor of philosophy or doctor of agriculture, \$25.

COURSES OFFERED.

Courses available as major subjects for the degree of doctor of philosophy:—

Agricultural Economics.
Agronomy.
Botany.
Chemistry.
Entomology.

Horticulture.
Microbiology.
Pomology.
Rural Sociology.

Courses available as major subjects for the degree of master of science:—

Agricultural Economics.
Agricultural Education.
Agriculture.
Agronomy.
Animal Husbandry.
Botany.
Chemistry.
Entomology.

Horticulture.
Mathematics and Physics.
Microbiology.
Pomology.
Poultry Science.
Rural Sociology.
Veterinary Science.

Courses available as major subjects for the degree of master of agriculture:—

Agronomy. Animal Husbandry. Poultry Science.

The course in Landscape Architecture leads to the degree of master of landscape architecture.

Courses available as minor subjects:—

Agricultural Economics.
Agricultural Education.
Agriculture.
Agronomy.
Animal Husbandry.
Animal Pathology.
Botany.
Chemistry.
Entomology.

Horticulture.
Landscape Architecture.
Mathematics and Physics.
Microbiology.
Pomology.
Poultry Science.
Rural Sociology.
Zoölogy.

GENERAL OUTLINE OF COURSES FOR ADVANCED DEGREES.

Agricultural Economics.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must have had the following courses or their equivalent: Economics and Sociology 50, Agricultural Economics 26 and 50.

REQUIRED WORK. — Candidates must take the following courses: Agricultural Economics 51, 52, 53 and 79. These courses, specially arranged for graduates, may be taken as Courses 120, 170, 155 and 180 for graduate credit. In addition, candidates must take Courses 110, 111, 130, 165 and 175 in Agricultural Economics; Rural Sociology 27 and 50, or equivalent courses; and Economics and Sociology 51 and 52, or equivalent courses.

Each candidate will be required to have a working knowledge of the general field of economics, the history of agricultural economics, the theory of agricultural economics, the problems of agricultural production, land tenure, land problems, agricultural commerce, agricultural co-operation, agricultural credit, statistics of agriculture, and prices, markets and marketing.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — The same as for the degree of doctor of philosophy, except that there is no language requirement.

GRADUATE COURSES OFFERED.

110. THEORY OF AGRICULTURAL ECONOMICS. — Readings in French, German and English on economics of agriculture. Alternate years, odd, 200 hours.

Credits, 3.

Professor CANCE.

111. CURRENT ECONOMIC PROBLEMS AND LITERATURE. — Department seminar throughout the year.

Credit, 1 each term.

120. HISTORICAL AND COMPARATIVE AGRICULTURE. — General survey. May be taken in connection with Course 51. Spring term, yearly.

Credits, 3.

Assistant Professor SAWTELLE.

121-122. HISTORY OF AMERICAN AGRICULTURE. — Special studies in the history of agricultural institutions, practices or relations. Fall term, even years.

Credits, 5.

Assistant Professor JEFFERSON.

130. PROBLEMS OF AGRICULTURAL PRODUCTION. — The relation of the farmer to the food supply. May be taken in connection with Course 77. Fall term, yearly.

Credits, 5.

Professor CANCE.

140. LAND TENURE AND THE ACQUISITION OF FARM LAND. — Readings, discussion, original exercises. Alternate years, even.

Credits, 3-5.

Professor CANCE.

145. FARM LABOR. — Reading and investigation.

Credits, 3.

Professor CANCE.

150. AGRICULTURAL COMMERCE, INDUSTRY AND TRADE. — A study of trade movements and commercial activities relating to agricultural products. Fall term, alternate years, odd.

Credits, 3-5.

Assistant Professor JEFFERSON.

Part II.

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155. THE AGRICULTURAL MARKET. — A study of the forces, methods and institutions of the market for agricultural products. Spring term, yearly.

Credits, 5.

Professor CANCE.

156. SPECIFIC PROBLEMS IN MARKETING FARM PRODUCTS. — Reports and discussions. Alternate years, odd.

Credits, 3.

Professor CANCE.

160. AGRICULTURAL PRICES. — Winter term, yearly.

Credits, 3.

Assistant Professor SAWTELLE.

161. AGRICULTURAL PRICES. — Spring term, yearly.

Credits, 3.

Assistant Professor SAWTELLE.

165. TRANSPORTATION OF AGRICULTURAL PRODUCTS. — Elementary discussion and report. Winter term, yearly.

Credits, 5.

Professor CANCE.

166. SPECIFIC TRANSPORTATION PROBLEMS. — Original study, reading and report on certain transportation problems related to agriculture. Alternate years, odd.

Credits, 3-5.

Assistant Professor SAWTELLE.

170. CO-OPERATION IN AGRICULTURE. — Elementary problems and discussion. May be taken in connection with Course 50. Winter term, yearly.

Credits, 5.

Professor CANCE.

171-172. SPECIAL PROBLEMS IN CO-OPERATION FOR ECONOMIC PURPOSES. — Study, original investigation and discussion. Every third year, beginning 1922.

Credits, 3-5.

Professor CANCE.

175. AGRICULTURAL CREDIT. — Readings and reports in addition to class lectures on agricultural credit. Taken in connection with Course 78. Spring term, yearly.

Credits, 3-5.

Assistant Professor SAWTELLE.

180. ELEMENTARY PRINCIPLES OF STATISTICS. — Chiefly related to agriculture. Lectures, laboratory studies and original work. Taken in connection with Course 79. Fall term, yearly.

Credits, 5.

Assistant Professor SAWTELLE.

181. SPECIFIC PROBLEMS IN STATISTICS OF AGRICULTURE. — Alternate years, even.

Credits, 3-5.

Assistant Professor SAWTELLE.

185. RURAL LAW. — Corresponds to Course 78. Spring term, yearly.

Credits, 5.

Mr. SMART.

186. STUDIES IN AGRICULTURAL LEGISLATION.

Credits, 3-5.

The DEPARTMENT.

190-195. INVESTIGATION OF VARIOUS PROBLEMS RELATED TO AGRICULTURAL ECONOMICS. — Credit given on basis of time spent and reports submitted.

200. THESIS. — Research work in agricultural economics will be developed by four principal methods, namely, historical, statistical, accounting and general field investigation. In all instances mastery of research methods includes facility in investigation, tabulation and interpretation of results.

Agricultural Education.

MAJOR REQUIREMENTS.

For the Degree of Master of Science.

PREREQUISITE WORK. — A minimum of 25 undergraduate credits distributed among the following lines of study: philosophy, psychology, history of education, principles and methods of teaching, school organization and administration. Successful teaching experience will receive consideration.

REQUIRED WORK. — At least 50 credits must be earned from the following list of courses in the department or met by accepted transferred credits.

GRADUATE COURSES OFFERED.

100. HISTORY OF EDUCATION.	Credits, 1-10.
104. VOCATIONAL EDUCATION.	Credits, 1-10.
105. CURRICULUM STUDY.	Credits, 1-20.
110. RURAL EDUCATION.	Credits, 1-15.
115. VOCATIONAL TEACHER TRAINING.	Credits, 1-10.
120. THEORY AND USE OF MENTAL TESTS.	Credits, 1-20.
125. SECONDARY EDUCATION.	Credits, 1-15.
130. ADVANCED EDUCATIONAL PSYCHOLOGY.	Credits, 1-20.
135. EDUCATIONAL PHILOSOPHY.	Credits, 1-20.
140. GENERAL EDUCATIONAL RESEARCH.	Credits, 1-20.
145. TEACHING METHOD AND PRACTICE.	Credits, 1-10.
200. THESIS.	Credits, 15-25.

MINOR REQUIREMENTS.

Minor work is offered in the department for the degrees of doctor of philosophy and master of science. Candidates must have had the equivalent of 15 undergraduate credits in education.

Agronomy.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must have had undergraduate courses 25 and 27 as described in this catalogue, and should have had thorough training in the elements of the natural sciences.

REQUIRED WORK. — Studies will be assigned from the courses listed below. Thesis problems may be chosen in the subject matter of soils, fertilizers or field crops.

For the Degree of Master of Science.

PREREQUISITE WORK. — As above.

REQUIRED WORK. — Assigned work will be selected from the courses listed below.

For the Degree of Master of Agriculture.

PREREQUISITE WORK. — The same as for the degree of master of science in so far as it is essential to establish the professional approach to agronomy, but in addition the candidate must be familiar with agronomical practices.

REQUIRED WORK. — As above.

GRADUATE COURSES OFFERED.

110. STUDIES IN THE CULTURE OF FIELD CROPS.	Credits, 5-20.
115. THE FERTILIZATION OF FIELD CROPS.	Credits, 5-20.
120. STUDIES IN HARVESTING AND STORAGE.	Credits, 5-20.
125. THE IMPROVEMENT OF FIELD CROPS.	Credits, 5-20.
130. TECHNOLOGY OF FIELD CROPS.	Credits, 5-20.
140. SOIL CLASSIFICATION.	Credits, 5-20.
145. STUDIES IN SOIL PHYSICS.	Credits, 5-20.
150. MOISTURE RELATIONSHIPS IN SOILS.	Credits, 5-20.
155. STUDIES IN SOIL MANAGEMENT.	Credits, 5-20.
160. SOIL TECHNOLOGY.	Credits, 5-20.
170. STUDIES IN SOIL FERTILITY.	Credits, 5-20.
180. FERTILIZER TECHNOLOGY.	Credits, 5-20.
190. STUDIES IN LITERATURE.	Credits, 5-20.
200. THESIS.	Credits, 15-50.

MINOR REQUIREMENTS.

Prerequisites are as stated for major work. In addition studies suited to the needs of the candidate will be selected from the above courses.

Animal Husbandry.

MAJOR REQUIREMENTS.

For the Degree of Master of Science or Master of Agriculture.

PREREQUISITE WORK. — Candidate must have had the following courses, or their equivalents, before he can enter graduate work in this department: Animal Husbandry 25, 26, 50, 51, 52, 53, 75 and 78. He should also be able to show evidence of experience in practical animal husbandry.

REQUIRED WORK. — At least 50 credits must be earned from the following list of courses offered by the department.

GRADUATE COURSES OFFERED.

100. ADVANCED BREED HISTORY.	Credits, 10.
110. NUTRITION OF FARM ANIMALS.	Credits, 10.
120. REPRODUCTION OF FARM ANIMALS.	Credits, 10.
200. THESIS.	Credits, 25.

MINOR REQUIREMENTS.

Minor work in animal husbandry may include undergraduate Courses 50, 51, 53, 81 or 82, and such other work in reading and compilation of material as the instructor may outline. Written examinations will be conducted at the completion of each term's work.

Animal Pathology.

MINOR REQUIREMENTS.

Minor work in animal pathology for the degrees of doctor of philosophy and master of science consists of an especially planned course for graduate students. This is not an undergraduate course, but is arranged to meet the needs of graduate

students who have not pursued a course in general pathology. It will continue throughout the year and include reviews in gross and microscopic anatomy, physiological, bacteriological, serological, biochemical and morbid anatomical phases of pathology. Written examinations will be given at the end of each term.

100. GENERAL PATHOLOGY. — As described above, fall term. Credits, 5.
120. GENERAL PATHOLOGY. — Continuation of 100, winter term. Credits, 5.
140. GENERAL PATHOLOGY. — Continuation of 120, spring term. Credits, 5.
160. BIOCHEMICAL PHASES OF PATHOLOGY. — Second year, fall term. Credits, 5.
180. PATHOLOGICAL HISTOLOGY. — Second year, winter term. Credits, 5.
- Professor GAGE.

Botany.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — The equivalent of certain undergraduate courses, determined by the department in the case of each student, is prerequisite.

REQUIRED WORK. — Candidates will be required to take Courses 100 through 107 and 180, 190 and 200. Courses 150 through 155 may be taken for graduate credit in certain cases. The maximum number of major credits which may be earned in this way is thirty-two.

For the Degree of Master of Science.

PREREQUISITE WORK. — The requirements are the same as for the degree of doctor of philosophy.

REQUIRED WORK. — Candidates will take Courses 100 and 101 and all courses from 102 through 107 which are given during their term of residence, also 180, 190 and 200. In certain cases Courses 150 through 155 may be taken, but not more than 20 credits may be earned in this way.

GRADUATE COURSES OFFERED.

Courses 100 through 106 are lecture courses. They are given in rotation, except Courses 100 and 101, which come every year.

100. PLANT PHYSIOLOGY. — The lectures will consider, under the nutrition of the plant: its chemical structure, absorption of various nutrient substances and their changes in the plant, assimilation and dissimilation of carbon and nitrogen by autotrophic and heterotrophic plants; under changes in the form of plants: growth and form under constant external factors, the influence of variable external and inner factors on growth, form and development; and under plant movements: the various tropisms, nutations, etc. Supplemental demonstrations, laboratory work and readings in the standard texts and journals. One lecture a week for 36 weeks. Credits, 3.

101. PLANT PATHOLOGY. — A general consideration of the history, nature and causes of plant disease; parasitism, predisposition, immunity, degeneration, natural and artificial infection, dissemination, epidemics, biologic strains, monstrosities and malformations, proliferation, prevention and control, economics of plant diseases. One lecture a week for 36 weeks. Credits, 3.

102. PLANT INHERITANCE. — This course is planned to give the student a comprehensive understanding of the principles and facts of plant inheritance. A study is made of plant variations, Mendel's law of heredity, the physical basis of heredity as established by chromosome behavior, pure lines, mutations, species and graft hybrids, etc. One lecture a week for 12 weeks. Credit, 1.

103. **BIOLOGIC RELATIONS.** — Consideration of certain phases of the morphological and physiological adaptations of plants with regard to insect visit; the rôle of thorns, hairs, tendrils, glands, etc. Various experiments are made to test out experimentally some of the existing theories concerning biologic adaptations. One lecture a week for 12 weeks. Credit, 1.

104. **THE ECOLOGY OF PLANTS.** — This course deals with the water, light and temperature relations of plants, and the various adaptations in response to these factors; the various types of plant formation; the migration of plants; the competition of plants; invasion and successions of plants under varied conditions; and the various types of alternations and zonations. One lecture a week for 12 weeks. Credit, 1.

105. **PHYSIOLOGICAL PLANT PATHOLOGY.** — This course considers those plant diseases not due to bacterial or fungous parasites, but resulting from unfavorable physical or chemical conditions of the soil; from harmful atmospheric influences, such as too dry air, too much moisture, hail, wind, lightning, frost; from injurious gases and liquids; from lack of or too much light; from wounds. A knowledge of the normal physiology of the plant is required. Demonstrations and laboratory work will be given, together with assigned readings. One lecture a week for 12 weeks. Credit, 1.

106. **HISTORY OF BOTANY.** — An historical survey of the science; lives of noted botanists; history of certain culture plants, such as wheat, corn, coffee, potato, rice, and their influence on civilization; reading. One lecture a week for 24 weeks. Credits, 2.

107. **METHODS IN DRAWING AND PHOTOGRAPHING FOR THESIS AND PUBLICATION.** — Twelve weeks. Credits, 1-3.

108. **THE COMPARATIVE ANATOMY OF GREEN PLANTS.** — See undergraduate Courses 61-63.

150. **SYSTEMATIC MYCOLOGY.** — See undergraduate Courses 52-54.

151. **SYSTEMATIC BOTANY OF THE HIGHER PLANTS.** — See undergraduate Courses 58 and 59.

152. **PLANT HISTOLOGY.** — See undergraduate Course 55.

153. **CYTOLOGY AND EMBRYOLOGY.** — See undergraduate Courses 82 and 83.

154. **PLANT PATHOLOGY.** — See undergraduate Courses 75-77.

155. **PLANT PHYSIOLOGY.** — See undergraduate Courses 78-80.

180. **SEMINAR.** — A weekly seminar for members of the department staff, graduate students and major senior students is held, at which important botanical papers are discussed. Attendance and participation are required. Credits, 3.

190. **COLLATERAL READING.** — Extensive reading of botanical literature in English, German and French, designed to give the student a broad knowledge of the science, is required of all major students. Final examinations are based in part upon this reading course. Credits, 5-10.

200. **THESIS.** — Each major student is required to select a problem in plant pathology or physiology (in other branches at the discretion of the department) for original investigation, and the thesis must embody a distinct contribution to knowledge. An effort will be made to assign problems having some bearing on scientific and economic agriculture. The thesis work counts for not more than 50 per cent of the total number of major credits required for either degree.

MINOR REQUIREMENTS.

For a minor a student may take such of the work offered by the department as seems best suited to his major course. Courses 150 and 155 are primarily undergraduate work which may be taken for minor credit toward advanced degrees. In most cases no problem will be assigned.

Professors OSMUN, CLARK, TORREY, DORAN and DAVIS.

Chemistry.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — The candidate must have taken undergraduate Courses 1 to 87, or their equivalent.

REQUIRED WORK. — The candidate will be required to take all the graduate courses listed below. He may also be required to spend at least one year at some other recognized institution, pursuing graduate study in chemistry. For the final examinations, questions will be selected from the entire field of chemistry, with special emphasis upon the lines of work covered by the research.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as that required for the degree of doctor of philosophy.

REQUIRED WORK. — The candidate will be required to take Courses 101 and 108 through 114. In addition he will pursue the requirements of one of the following thesis subjects: —

Organic and Biochemistry. — Course 200 and either 105 or 106, and 103 (b) or (f), and 104.

Analytical and Industrial Agricultural Chemistry. — Courses 200, 103 (one course), 102, 104, 105, 106.

Physical Chemistry. — Courses 200, 104, and one course selected from 102, 103, 105, and 106.

Agricultural Chemistry. — Courses 200, 103 (one course), and one course selected from 102, 104, 105 or 106.

The candidate must pass a final written and oral examination before the department upon undergraduate Courses 1 through 80, as well as upon all graduate work taken in chemistry.

GRADUATE COURSES OFFERED.

101. INORGANIC PREPARATIONS. — Laboratory. The preparation of chemical products from raw materials. The manufacture and testing of pure chemicals. The laboratory work is essentially synthetic in nature, and is designed to aid in acquiring a more adequate knowledge of inorganic chemistry than is to be obtained by chemical analysis alone. Ten to fifteen of the preparations given in Biltz's "Laboratory Methods of Inorganic Preparations" will be made by each student. Any term.

Credits, 3-5.

Assistant Professor SEREX.

102. ADVANCED INORGANIC PREPARATIONS. — Laboratory. Continuation of Course 101. Any term.

Credits, 3-5.

Assistant Professor SEREX.

103. ADVANCED ANALYTICAL CHEMISTRY. — Laboratory. This course may be taken in part as follows: (a) electrolytic analysis, 6 credits; (b) ultimate analysis, 3 credits; (c) special analytical work to meet the needs of the individual student, 5 credits. In addition the following subjects may be taken if desired: (d) fertilizers, 5 credits; (e) insecticides, 3 credits; (f) milk and butter, 6 credits. (a), (b), (c) may be taken any time; (d), (e), (f) should be taken at the time the undergraduate course is given.

Professor PETERS.

Part II.

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104. ADVANCED PHYSICAL CHEMISTRY. — Laboratory. Measurement of the electrical conductivity of solutions; degree of ionization; ionization constants; per cent hydrolysis of aniline hydrochloride from conductivity measurements; solubility product by the conductivity method; velocity of saponification by conductivity; neutralization point by conductivity; vapor pressure determinations; critical temperature of carbon dioxide or sulphur dioxide; transport numbers; preparation and properties of colloidal solutions; transition points by dilatometric method; heat of solution of ammonium chloride and potassium nitrate; adsorption of iodine by charcoal; determination of hydrogen ion concentration. To each student separate work will be assigned. Any term.

Credits, 5.

Assistant Professor SEREX.

105. ADVANCED ORGANIC CHEMISTRY. — Laboratory. The preparation of compounds not included in Courses 51 and 52, such as the Kolbe synthesis of salicylic acid; benzophenone and Beckmann's rearrangement; rosaniline, malachite green, Congo red, indigo and other dyes; synthesis of fructose; Grignard reaction. Barnett, Cain & Thorpe, Gattermann, Noyes, Fischer and other laboratory guides are used. To each student separate work will be assigned. Any term.

Credits, 5.

Professor CHAMBERLAIN.

106. ADVANCED PHYSIOLOGICAL AND FOOD CHEMISTRY. — Laboratory. An intensive study of some of the more important physiological processes, physiological compounds or food ingredients. Studies of milk, blood, urine or other physiological factors under various metabolic and pathologic conditions. To each student separate work will be assigned. Any term.

Prerequisite, Chemistry 80.

Credits, 5.

Dr. BUTLER.

108. THEORETICAL CHEMISTRY. — Lectures. The following topics are considered: the compressibility of the atoms; the structure and size of atoms; the electron conception of valence. Third term. Alternates with Course 109.

Credits, 2.

Professor PETERS.

109. ANALYTICAL CHEMISTRY. — Lectures. A general survey of methods and technique covering processes commonly carried out in the laboratory. Third term. Alternates with Course 108.

Credits, 2.

Professor PETERS.

110. ORGANIC CHEMISTRY. — Lectures. Some of the following topics will be considered both theoretically and industrially: alkaloids, synthetic dyes, essential oils, terpenes, rubber, etc.; the study of methods for carrying out general reactions; isomerism, tautomerism, condensation, etc. References: Cain & Thorpe, Cohen, chemical monographs, Lassar-Cohn, Heinrichs, Molinari. First term.

Credits, 2.

Professor CHAMBERLAIN.

111. ADVANCED PHYSIOLOGICAL AND FOOD CHEMISTRY. — Lectures. A study of the recent advances in this field. An intimate treatment of the more important physiological factors and their relations to health, nutrition and growth. Second term.

Prerequisite, Chemistry 80.

Credits, 2.

Dr. BUTLER.

112. THEORETICAL AND PHYSICAL CHEMISTRY. — Lectures. The relation between the constitution and properties of compounds; mutarotation; steric hindrances; stereoisomerism of other elements than carbon; molecular association; similarity between the compounds of silicon and carbon. Third term. Alternates with Course 113.

Credits, 2.

Assistant Professor SEREX.

113. THEORETICAL AND PHYSICAL CHEMISTRY. — Lectures. A general outline of radioactivity and colloid chemistry. Third term. Alternates with Course 112. Credits, 2.

Assistant Professor SEREX.

114. SEMINAR. — Conferences, reports or lectures. Three terms, twice a month. Credit, 1.

Professor LINDSEY.

200. THESIS. — Research, and, in the case of a degree, the preparation of an acceptable thesis in agricultural, analytical, organic or physical chemistry, under the direction of the professor in charge of the work. Credit determined by work done.

MINOR REQUIREMENTS.

Work may be selected from any of the undergraduate Courses 51 to 87, or any of the graduate courses for which the student is prepared. In addition, the candidate may be required to pass a final written and oral examination before the department upon his entire minor work.

Entomology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Students must have had all the undergraduate courses given at this college or their equivalent. Opportunities to make up any deficiencies will be available while the graduate work is being carried on.

REQUIRED WORK. — The graduate courses consist of lectures on all, and laboratory work on a part, of the subjects given below, together with advanced readings, seminar work and original research.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — A major course for the master of science degree will be about half of the courses listed below.

GRADUATE COURSES OFFERED.

100. MORPHOLOGY. — 1. Embryonic development of insects and polyembryony.

2. Metamorphosis and its interpretations.

3. Advanced external and internal anatomy.

4. Insect histology and physiology.

5. Ancestry and development of insects, including fossil insects.

6. Hermaphrodites in insects.

7. Hybrids.

8. Parthenogenesis, pedogenesis and heterogeny.

9. Chemistry and physics of insect colors.

10. Color patterns, their significance and value.

11. Luminosity.

12. Deformities.

13. Variation in insects.

120. ECOLOGY. — 1. Dimorphism and polymorphism.

2. Mimicry, including concealment, protective devices and warning coloration.

3. Architecture of insect structures.

4. Relation of insects to plant fertilization and its importance.

5. Insect products of value to man.

6. Geographical distribution and methods of distribution of insects, with a consideration of life zones, barriers, etc.

7. Insect migrations.

Part II.

8. Insect behavior and experimental entomology.
9. Enemies of insects.
10. Duration of life.

140. ECONOMIC ENTOMOLOGY. — 1. Control methods.

2. Insect photography and methods of preparing illustrations.
3. Field work and life history investigations with methods for keeping records.
4. Legislation about insects.
5. Studies of insecticides and their application.

160. SYSTEMATIC ENTOMOLOGY. — 1. History of entomology and of classifications.

2. Lives and works of prominent entomologists.
3. Abundance of insects.
4. Important collections, public and private; their location and their value.
5. Types of insects; their significance, importance and location.
6. Rules of nomenclature and how they are used.
7. Methods for collecting, preparing, preserving and shipping insects.

180. SEMINAR. — Readings and reports on the current literature of entomology; monthly meetings.

190. COLLATERAL READINGS. — The best articles on the various topics in entomology are assigned for collateral readings, and are included in the final examinations.

200. THESIS. — Original research on one or several topics in morphology, ecology, economic and systematic entomology. This is expected to require from one-half to three-quarters of the total working time of the student.

MINOR REQUIREMENTS.

Minor courses will cover such parts of the work outlined above as will be most likely to prove useful in connection with the majors taken by the students, or in their future work. It is not required that such men shall have had all the undergraduate work in entomology given at this college, their credit for a minor beginning where their own undergraduate training in the subject ended.

Horticulture.

Graduate work is offered in various lines of horticulture. For the most part this is divided into the different departments which constitute the college Division of Horticulture, as follows: pomology, floriculture, landscape gardening, forestry and market gardening. For work in these lines application should be made direct to the heads of the several departments.

Besides this work, however, opportunity is offered for graduate study in general horticulture, including topics from the several organized departments mentioned, and also questions relating to plant breeding, general evolution, propagation, manufacture of horticultural products, etc. This general work is under the direction of Professor Waugh, head of the Division of Horticulture.

Landscape Architecture.

MAJOR REQUIREMENTS.

For the Degree of Master of Landscape Architecture.

PREREQUISITE WORK. — The undergraduate courses in the college known as Landscape Gardening 50, 51 and 52, Drawing 25, 26 and 27, Horticulture 50 and 51, and Mathematics 26 and 27 will be considered prerequisite to graduate work, and any student who has not passed these courses, or their equivalent, will be required to make up such work without graduate credit.

REQUIRED WORK. — Each student before he may receive the master's degree with a major in this department must convince his instructors that he has a genuine aptitude for some branch of landscape gardening, either in design, construction or management.

The minimum period of graduate study will be one and one-half years. At least one year of this time must be spent in residence at the college. One year must also be spent in practice outside the college. The work done outside the college may be prescribed by the department, and must be fully reported to the department in writing. It is essential, further, that the candidate secure the written approval of his employers outside the college. The department may, at its discretion, require a longer period of study at the college or a longer apprenticeship outside the college.

Every student before receiving his master's degree in landscape architecture must have given some thorough and fruitful study to each of the following five departments. As far as possible these studies must be of a practical nature, *i.e.*, they must be made upon actual projects in progress of development.

1. *Theory.* — The principles of esthetics as applied to landscape architecture.
2. *Design.* — The principles of pure design and their application in landscape and garden planning.
3. *Construction.* — The practical methods of carrying out landscape plans, laying out, equipment, organization of working force, time and cost keeping, etc.
4. *Maintenance.* — Methods, organization, cost.
5. *Practice.* — Office work, drafting, estimating, reporting, charges, accounting.

While great freedom is allowed to graduate students in their plans of work, a certain portion of time will always be given to systematic courses of instruction. Courses known as Landscape Gardening 175, 176, 177, 178, 179, 180, 181 and 182 are required, and may or may not be accepted for graduate credit, at the discretion of the department.

GRADUATE COURSES OFFERED.

175. **THEORY OF LANDSCAPE ART.** — Same as Landscape Gardening 75. First term.
Credits, 3.
Professor WAUGH.

176. **CIVIC ART.** — Same as Landscape Gardening 76. Second term.
Credits, 4.
Professor WAUGH.

177. **COUNTRY PLANNING.** — Same as Landscape Gardening 77. Third term.
Credits, 4.
Professor WAUGH.

178. **ARCHITECTURE.** — Same as Landscape Gardening 78. Third term. Given in alternate years.
Credits, 3.
Assistant Professor HARRISON.

179. **CONSTRUCTION.** — Same as Landscape Gardening 79. Third term. Given in alternate years.
Credits, 3.
Assistant Professor HARRISON.

180. **THEORY OF DESIGN.** — Same as Landscape Gardening 80. First term.
Credits, 4.
Professor WAUGH.

181. **ESTATE DESIGN.** — Same as Landscape Gardening 81. Second term.
Credits, 4.
Assistant Professor HARRISON.

182. **PARK DESIGN.** — Same as Landscape Gardening 82. Third term.
Credits, 4.
Assistant Professor HARRISON.

Part II.

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190. THEORY. — Special studies.

Credits, 2-10.

The DEPARTMENT.

191. DESIGN. — Individual problems by arrangement.

Credits, 2-10.

The DEPARTMENT.

192. CONSTRUCTION. — Individual problems by arrangement.

Credits, 2-10.

The DEPARTMENT.

193. MAINTENANCE. — Special studies, experimental work of assigned problems.

Credits, 2-10.

The DEPARTMENT.

194. PRACTICE. — Professional field work under supervision. By arrangement.

Credits, 2-10.

The DEPARTMENT.

195. SEMINAR.

Credits, 1-5.

Professor WAUGH.

200. THESIS. — Each student before receiving the master's degree with a major in landscape architecture must present a satisfactory thesis or complete project. A thesis will consist of a careful original study of some problem in landscape architecture, presented in typewritten form with any necessary illustrations, such as photographs, diagrams, drawings, etc. A project will consist of a completed set of studies of some suitable landscape-gardening problem, such as the design of a park, a real estate subdivision, an extensive playground. Such a project will usually consist of —

(a) Original surveys, including topography.

(b) Block plans, showing original design.

(c) A rendered plan or plans of the main features.

(d) Detailed working drawings.

(e) Estimates of cost.

(f) Complete report and letter of transmittal.

Credits, 5-20.

MINOR REQUIREMENTS.

Any student electing a minor in landscape architecture will be directed to take such courses from the regular catalogue list as may seem most suitable to him. Under ordinary circumstances no other work will be given to students electing minors. In special cases, however, individual problems will be assigned and individual instruction given. These exceptions will be made in cases where, by so doing, it is possible to give the student material assistance in the plan of his major work.

Microbiology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidate must have had Courses 50, 51, 52, 80, 81, 82 and 83, or their equivalents, before he can enter upon graduate work.

REQUIRED WORK. — Studies will be selected from the courses offered below. It will be the purpose of the department to distribute such studies among the courses offered in a manner to gain the greatest efficiency and a comprehensive knowledge of the entire field. The work will be conducted by prescribed readings, critical written reviews, conferences, lectures and laboratory exercises.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — Courses of a basic and applied character selected from the courses offered below which will prepare the student for effective effort.

GRADUATE COURSES OFFERED.

100. HISTORY OF MICROBIOLOGY.	Credits, 5-10.
110. CYTOLOGICAL AND MORPHOLOGICAL STUDIES AND CORRESPONDING TECHNIQUE.	Credits, 5-10.
120. STUDIES IN TECHNIQUE AND METHODS.	Credits, 5-20.
130. PHYSIOLOGICAL STUDIES.	Credits, 5-20.
135. INDUSTRIAL FERMENTATIONS.	Credits, 5-10.
140. AGRICULTURAL MICROBIOLOGY — GENERAL SURVEY.	Credits, 5-20.
141. MICROBIAL STUDIES IN AGRICULTURE.	Credits, 5-10.
150. SOIL MICROBIOLOGY.	Credits, 5-20.
160. DAIRY MICROBIOLOGY.	Credits, 5-20.
170. FOOD MICROBIOLOGY.	Credits, 5-20.
180. HYGIENIC MICROBIOLOGY.	Credits, 5-20.
181. SPECIAL SANITARY OR HYGIENIC STUDIES.	Credits, 5-10.
190. LECTURES AND STUDY OF LITERATURE.	Credit, 1 each term.
200. THESIS. — Some microbiological problem related to agriculture or food. Distributed as may be most beneficial for research work. Time and credit by arrangement.	
	Credits, 15-50.

MINOR REQUIREMENTS.

Minor work in microbiology may consist of undergraduate Courses 50, 51, 52, and other courses designed to support the major work, from among the courses offered above. The candidate will also be required to pursue graduate Course 190, or follow a course of reading and conferences through three terms. In case the candidate has had some of these courses, he will be required to take more advanced substitute courses.

Pomology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must have had the equivalent of the courses required for graduation from this college; also sufficient practical experience to enable them to understand and appreciate the problems of orchard practice.

REQUIRED WORK. — The work outlined below will be required of all candidates.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — One-half of the work outlined below, selected to meet the needs of the individual student, will be required.

GRADUATE COURSES OFFERED.

101. EXPERIMENTAL METHODS.	Credits, 15-20.
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A critical study of the methods of research that have been used or may be helpful in pomological work. The following topics will be considered from the point of view of the investigator in pomology.

1. Statistical methods.
2. Measures of growth and yield.
3. The conduct of plot experiments.

4. Methods of soil study in their relation to pomological research.
5. Chemical methods of pomological research.
6. Methods of physiology applicable to fruit plants.
7. Microchemistry.

102. POMOLOGICAL RESEARCH.

Credits, 15-20.

A critical survey of past and current research work in pomology. Semi-weekly meetings for reports and discussions will be held. The following topics will be taken up.

1. Orchard soil management.
2. Soil fertility and fertilizers.
3. Physiology of pruning tree fruits and bush and vine fruits.
4. Fruit bud differentiation.
5. Sterility and Fertility.
6. Genetics of fruit plants.
7. Climatology and winter injury.
8. Advanced morphology.
9. Spraying machinery and equipment.
10. Special practices.

103. ADVANCED LABORATORY WORK.

Credits, 5-12.

Each student will be required to become familiar with the research work of the department and to have a share in it. So far as this has value as graduate work he will receive credit.

104. HISTORY OF POMOLOGY.

Credits, 2-5.

The men, institutions and other influences that have contributed to the development of the science and art of pomology.

105. HORTICULTURAL TAXONOMY.

Credits, 2-3.

A study of the history and development of plant classification with special reference to horticultural plants. A study of modern classification carries with it an expression of opinion as to the evolution of cultivated plants.

106. ADVANCED SYSTEMATIC POMOLOGY.

Credits, 6-10.

The principles of systematic pomology including a study of nut and subtropical fruits not usually dealt with in undergraduate courses.

200. THESIS.

Credits, 40-50.

Each student will be required to carry out an original investigation of an assigned problem. In the planning, executing and interpreting the data of this problem he must show marked ability. The results are embodied in a thesis to be passed upon by the Department and the Graduate Staff.

MINOR REQUIREMENTS.

Students taking a minor in pomology will select such of the above courses as may be suited to their needs. Certain advanced undergraduate courses may also be taken for minor credit.

Poultry Science.

MAJOR REQUIREMENTS.

For the Degree of Master of Science or Master of Agriculture.

PREREQUISITE WORK. — The postgraduate course presupposes all undergraduate work or its equivalent, together with practical experience. Without the latter, students will be unable to handle Courses 140, 150 and 160. At the discretion of the instructor in charge, graduate students may be required to pursue undergraduate courses in other departments without credit.

REQUIRED WORK. — All the courses listed below. Practical poultry work may be required, but no credit will be given for such work.

GRADUATE COURSES OFFERED.

101. **READING.** — A review of the entire field of poultry literature, covering books, bulletins and special articles, is made, and a written report on one or more subjects required.

110. **SEMINAR.** — A critical review and a criticism of the more important experiments carried on at various stations in this and other countries; also a study of poultry conditions in foreign countries, methods of management, etc., besides a detailed study of some of the largest poultry projects in this country.

120. **ANATOMY (GROSS AND HISTOLOGICAL), PHYSIOLOGY AND SURGERY.** — This course requires a careful study of the anatomy and physiology of the fowl. Special attention is given to a study of those structures concerned with practical poultry problems. Instruction in surgical technique, adapted to fowls, may also be given.

130. **BREEDING.** — The student will carry on such breeding experiments as time and facilities permit. He may also do work in connection with our regular experimental projects. A detailed study of the pertinent literature will be required. Animal Husbandry 5, or its equivalent, is a prerequisite.

140. **FEEDING.** — A study of the relation of various foods and other substances to the morphology and physiology of the bird, with special reference to such subjects as egg production, feather form and structure, condition of flesh, bone, etc.

150. **BROODING.** — Studies will be made upon the relation between viability and rate of growth and the following topics: type of brooder, number of chicks in brood, ventilation, humidity, sanitation, exercise and weather conditions; also a comparison of natural methods with artificial methods of rearing chicks.

160. **INCUBATION AND EMBRYOLOGY.** — A number of problems of a practical, scientific and mechanical nature relating to incubation are considered. The work in embryology is of an advanced nature, dealing with its relation to morphogenesis and heredity, and presupposes an elementary knowledge of the embryology of the chick.

170. **POULTRY DISEASES AND SANITATION.** — In this course a study is made of various problems in poultry sanitation, with particular reference to methods relating to the control and eradication of disease.

200. **THESIS.**

MINOR REQUIREMENTS.

Courses 101 and 110 are designed particularly for minors.

Rural Sociology.

MAJOR REQUIREMENTS.

For the Degree of Doctor of Philosophy.

PREREQUISITE WORK. — Candidates must present satisfactory evidence of having completed at least 10 credit hours in general sociology and 10 credit hours in general economics; or take such undergraduate courses as the department may designate to satisfy this requirement.

REQUIRED WORK. — Candidates must take or pass by satisfactory examination courses offered by the department for undergraduates bearing the numbers 26, 50, 51, 52 and 75, and such courses in agricultural education and agricultural economics as may be required, not to exceed 10 credit hours in each department. Candidates will be required to select from the courses listed below as graduate courses a field for investigation and intensive study. Candidates for the doctorate must take all courses listed as graduate.

For the Degree of Master of Science.

PREREQUISITE WORK. — The same as for the degree of doctor of philosophy.

REQUIRED WORK. — Not less than 50 credit hours will be required from the courses listed below. The department will make such selection as may best meet the interest of the individual student.

GRADUATE COURSES OFFERED.

177. FIELD WORK OF AN INVESTIGATIONAL NATURE.

178. RURAL SOCIAL SURVEYS.

179-181. SEMINAR.

182. SOCIAL CONDITIONS OF AMERICAN RURAL LIFE.

183. SOCIAL CONDITIONS OF EUROPEAN RURAL LIFE.

184. RURAL INSTITUTIONS.

185. RURAL ORGANIZATION.

186. FARMERS' ORGANIZATIONS.

187. TOWN AND VILLAGE RURAL LIFE.

188. RURAL HEALTH AND SANITATION.

189. RURAL LITERATURE.

190. RURAL GOVERNMENT AND LAW.

200. THESIS.

Veterinary Science.

Work is available in hygiene, veterinary pathology, and other special lines or divisions of the subject.

Zoölogy.

MINOR REQUIREMENTS.

Courses in zoölogy may be available as a minor for the degrees of doctor of philosophy and master of science. The nature of the work will necessarily vary according to circumstances, and may be intensive in a special field and correlated closely with the major work of the student, or it may be of a more general character, depending on the student's needs or previous acquaintance with general zoölogical science.

THE SHORT COURSES.

The short courses offered by the Massachusetts Agricultural College are designed to meet the needs of those, both young and old, who cannot come to the college for the regular college courses. They furnish the student with instruction in modern accepted methods, and are planned to help the farmer and the housewife.

The short courses include:—

- A. The Two-Year Course in Practical Agriculture.
- B. The Ten Weeks' Winter School.
- C. The Summer School.
- D. The Vocational Poultry Course.

REQUIREMENTS FOR ADMISSION TO SHORT COURSES.—Students must be at least seventeen years of age, and must furnish satisfactory evidence of good moral character. References are required. There are no entrance examinations. The sole test is ability to do the prescribed work. Students enrolling for the Two-Year Course in Practical Agriculture must have at least a common school education.

EXPENSES OF SHORT COURSES.—The expense of attending any of the short courses is approximately as follows:—

Furnished rooms in private houses (per week)		\$3 to \$5
Board at college dining hall (per week)		\$8
Board with private families (per week)		\$6.50 to \$9
Registration fee (Ten Weeks' Winter School)		\$5
Tuition fee (Winter School and Summer School)		\$10
Tuition fee (Two-Year Course) (per term)		\$20

In addition small laboratory fees are charged in some of the courses.

A. TWO-YEAR COURSE IN PRACTICAL AGRICULTURE.

The Two-Year Course in Practical Agriculture is offered to meet the needs of students who for one reason or another cannot take the four-year college course. It is designed to provide a large amount of practical information and training in agriculture and horticulture.

It will appeal, not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming. Although the course is planned to meet the needs of those who are not graduates of high schools, the instruction is not preparatory or elementary in its nature, but is so planned that it will be of value to all. The greater amount of academic training that some of the students may possess will in a measure be offset by the fund of practical knowledge possessed by many who have completed only the elementary schools.

The course is not intended for students enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement either from the principal of the high school or from parent or guardian asking permission to be enrolled.

The Two-Year Course in Practical Agriculture is arranged so as to provide specific vocational training for the particular lines of agricultural work which the

students may select. When a student enrolls he is required to state the type of farming in which he expects to engage; and to select from the following courses of study the one he wishes to pursue:—

1. General agriculture, with animal husbandry as the principal subject.
2. General agriculture, with poultry as the principal subject.
3. Dairy manufactures.
4. General horticulture.
5. Fruit growing.
6. Floriculture.
7. Vegetable gardening.

He then pursues a specially arranged course of preparation for that type of work. This specialization does not prevent his securing a general working knowledge of other subjects in which he may be interested.

The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and young women who may not have had the opportunity of securing a high school education.

The first year consists of six months of study at the college. The term begins the first Monday in October and closes with the winter term of the regular session. The same vacation periods are observed as in the regular four-year course.

At the close of six months of study, students are required to gain six months of farm experience. The college will assist students in finding positions and in placing them on farms where the experience gained will be of great advantage. Thus an effort will be made to place on a dairy farm the man expecting to take up dairying as his chief line of work, and a student of pomology on a fruit farm.

During the second year the student spends nine months in resident study, completing the subject pursued in the first year.

Each student is required to file with the treasurer of the college a statement, signed by the town (or city) clerk of the town (or city) from which he enrolls, stating that the parent or guardian of the student is a resident of that town.

CERTIFICATE.—Students completing satisfactorily work prescribed in the Two-Year Course will receive certificates.

Credits earned in the Two-Year Course in Practical Agriculture or in any other of the short courses except the Summer School, do not lead to the college degree.

TUITION.—A tuition fee of \$20 per term is charged to all students who are residents of Massachusetts. Students who are not residents of Massachusetts are charged a tuition fee of \$60 a term.

B. THE WINTER SCHOOL.

The Winter School, beginning usually about January 1 and continuing for ten weeks, was started several years ago, and has always been very popular, not only with more mature farmers and their wives, but with young men and women who control or manage farms. The courses, though short, are very practical in their nature, and are so arranged that a student may choose such subjects as will enable him to specialize along the line of work in which he is most interested. There is a wide range in the choice of subjects, making it possible for the student to take work for several winters in succession. Many college graduates enroll for the Winter School.

SCHOLARSHIPS.—The Jewish Agricultural and Industrial Aid Society of New York has instituted a system of free scholarships to enable the children of Jewish farmers to attend the short winter course in the States in which they reside. The stipend is sufficient to pay all the expenses of the holder for the course. Such expenses usually amount to from \$100 to \$150. The following courses are offered:—

OUTLINE OF THE TEN WEEKS' WINTER SCHOOL, JANUARY 3 TO MARCH 11.

Soil Fertility. Two lectures and one two-hour laboratory period per week.

Field Crops. Two lectures and one two-hour laboratory period per week.

Types and Breeds of Livestock. Three lectures and two two-hour laboratory periods per week.

Livestock Feeding. Three lectures per week.

Animal Breeding. Three lectures per week.

Dairy Bacteriology. Two lectures and one two-hour laboratory period per week.

Animal Diseases and Stable Sanitation. Five lectures per week.

Poultry Husbandry. Five lectures and one two-hour laboratory period per week.

Poultry Diseases. Two lectures and one two-hour laboratory period per week.

Vegetable Gardening. Three lectures and two two-hour laboratory periods per week.

Floriculture. Five lectures per week.

Horticultural Manufactures. Two lectures and two two-hour laboratory periods per week.

Farm Management. Two lectures per week.

Farm Accounts. Two two-hour laboratory periods per week.

Farm Motors. Three lectures and two two-hour laboratory periods per week.

Marketing. Two lectures per week.

Botany. Two lectures per week.

Entomology. Three lectures per week.

Rural Sanitary Science and Hygiene. Two lectures per week.

Agricultural Opportunities for Women. Two lectures per week.

Food for the Family. Two lectures and three two-hour laboratory periods per week.

Clothing for the Family. Two lectures and three two-hour laboratory periods per week.

Family Health. Three lectures per week.

Home Management. Five lectures per week.

Principles and Methods of Teaching. Five lectures per week.

Special Methods in Vocational Agricultural Teaching. Five lectures per week.

Agricultural Teaching Improvement Problems in Massachusetts. Five periods per week.

Ten Weeks' Winter Course in Fruit Growing. — A specialized course in fruit growing intended for persons who are interested in the growing of fruit for profit.

The work will require practically all of the student's available time while at the college and every student is expected to take all the courses offered.

Enrollment is limited to fifteen students.

Courses Offered.

- I. Tree Fruits.
- II. Pruning.
- III. Spraying.
- IV. Small Fruits.
- V. Harvesting and Marketing.
- VI. Farm Motors.

Ten Weeks' Course For Greenskeepers. — A specialized course for men engaged in the profession of greenskeeping, or members of greens committees. This course has been arranged in co-operation with the New England Greenskeepers' Club, and the subjects as outlined can be effectively studied during the winter months.

Applicants for this school must be members of the greens committee, greenskeepers, or must have had at least one year's experience on a golf course, and their application blanks must be countersigned by the greenskeeper and chairman of the greens committee.

No entrance examinations are required, but it is expected that the student will have a reasonable education in the English language.

The number of students is limited to ten, and registration will be confined to citizens of Massachusetts until December 1, 1926. After that date, if there be vacancies, out-of-state students will be admitted in order of the filing of their applications.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student for misconduct, or failure to properly meet the requirements of the course.

Applicants may register for one or more of the courses offered, but will not be permitted to enroll after the course has started.

The winter school certificate will be given to those who complete the full course with credit.

Courses Offered.

- I. Motors.
- II. Water Systems.
- III. Soil Fertility.
- IV. Equipment.
- V. Reference Reading and Record Keeping.
- VI. Grasses and Grass Seed.
- VII. Cost Keeping and Analysis.
- VIII. Individual Problem.
- IX. Fundamentals of Landscape Arrangement.
- X. Drainage.

Practical and Scientific Course for Florists. — A special program for men and women engaged in floricultural work with a complete group of classes.

Courses Offered.

- I. Soils and Fertilizers.
- II. Garden Flowers and Bedding Plants.
- III. Commercial Floriculture.
- IV. Floral Arrangement.
- V. Insect Pests.
- VI. Plant Diseases.
- VII. Special lectures by commercial florists, retail florists, and gardeners of note.

This Florists School is given only on alternate years and is scheduled next for January to March, 1928.

Courses in Dairying. — A series of three ten-day courses in dairying are conducted each year running in sequence from January through February.

- Course I. Testing, Analyzing and Inspecting Dairy Products.
Course II. Milk Plant and Creamery Operation.
Course III. Ice Cream Making.

C. THE SUMMER SCHOOL.

The Summer School has been maintained by the college for a number of years. The experience of these years has been of value in arranging short, intensive, practical courses that will meet the needs of teachers, home makers and professional workers who wish instruction in agriculture, horticulture, education, and home economics, and who can most conveniently come to the college during the summer. The instruction is given by the regular members of the college staff, assisted by outside lecturers. The term period is six weeks.

College credit is now offered for work in the Summer School. For teachers and other students interested in professional improvement, or working for degrees, this change is especially valuable.

While agricultural courses were not presented during the past summer, if a demand develops for such work, it will be included in the program.

The nature of the work of the Summer School is indicated by the following typical program:

Home Economics:

Garment making, elementary
 Dress design and construction, advanced
 Millinery
 Textiles
 Health education
 Foods

Science and Allied Courses:

Dramatic presentation
 Design and practical arts
 Hygiene and sanitation
 General science
 Public health
 Food preservation
 Flower growing
 Botany for the teacher
 Cultivated trees and shrubs

Freshman and College Preparatory Courses:

Plane geometry
 Higher algebra

Freshman and College Preparatory Courses — *Con.*

Preparatory algebra
 Preparatory English
 College entrance English
 Education and Allied Subjects:
 Principles and methods of teaching
 Special methods in vocational agricultural teaching
 Professional improvement problems
 Supervision and administration of agricultural education
 Vocational education
 Educational psychology
 Mental tests
 Content and methods in general science
 Methods of teaching English in the high school
 Method of teaching and supervision of mathematics
 Principles of secondary education
 Modern philosophy of education

D. ONE-YEAR VOCATIONAL POULTRY COURSE.

PURPOSE. — This course is designed for graduates of the agricultural vocational schools and others who wish to prepare themselves for practical poultry keeping, and can spend only one year at college.

SCOPE. — The work covers seven detailed courses in poultry husbandry, as well as short-course work in fruit growing, market gardening, animal husbandry, or other subjects that will be helpful to poultry raisers. In addition to classroom and laboratory exercises each student is required to put in from eight to ten hours per week at the plant in the care and management of poultry, for the purpose of becoming proficient in the various branches of the work.

ENTRANCE REQUIREMENTS. — Applicants must be at least eighteen years of age and have a good elementary education.

FEES. — There is a tuition fee for residents of Massachusetts of \$20 per term and a laboratory fee of \$5 is required for both the fall and spring terms.

NOTE. — The course is limited to sixteen students. The One-Year Poultry Course begins at the beginning of the winter term and continues until the following December.

GENERAL INFORMATION.

A. FINANCIAL AND ADMINISTRATIVE.

Student Expenses.

TUITION. — Tuition for residents of Massachusetts is \$60.00 per year. For students who are not residents of Massachusetts, the tuition fee is \$180 per year. Students entering from Massachusetts are required to file with the Treasurer a statement signed by either town or city clerk stating that the applicant's father is a legal resident of Massachusetts.

All students entering the college for the first time as undergraduates or two-year students are charged a matriculation fee of \$5.00, which in the event of a student's leaving the institution, is returned, if all bills due the college are paid, or is upon graduation considered as payment for the diploma.

ROOMS. — Students are expected, as far as possible, to occupy rooms in the college dormitories. Students who do not live in the college dormitories must secure rooms approved by the college. The assignment of rooms, and the general supervision of the housing of students, is in charge of the Dean. At the end of each college year all unoccupied rooms will be thrown open for selection, and will be assigned to students according to classes.

Dormitory accommodations for men are available at the college for about 62 students. Students desiring rooms in the dormitories, should make application to the Dean of the college on or before the first Monday in May, and the Dean will give notice of the time and place for the assignment of rooms. A freshman cannot be assigned to a room in the dormitories until his entrance record has been accepted by the Dean. No assignment of rooms is made except through the regular application blank, a copy of which can be obtained from the Dean. A deposit of \$5.00 is required when the reservation is made. The rental is \$12.00 to \$23.00 per term.

Students who leave college at the end of the college year or who change from one room to another or from a college room to a private house or a society house must remove all furniture and property from their rooms immediately after commencement in June. Furniture not thus removed by the owner will be removed by the college and stored at the owner's expense. The college will assume no responsibility for any damage to the furniture thus stored. The rooms in the college dormitories are unfurnished; for the most part, they are arranged in suites of three, — one study room and two bedrooms. These rooms are heated by steam and lighted by electricity; they are cared for by students occupying them.

Dormitory accommodations for women are available at the college for 105 girls. Applications for rooms should be made to the Advisor of Women. A freshman cannot be assigned to a room in the dormitory until her entrance record has been accepted by the Dean. A deposit of \$5.00 is required when a room is reserved. The rental is \$33.00 to \$39.00 per term. All students living in the Abigail Adams House take their meals at Draper Hall. Rooms in the dormitory are furnished except for necessary bedding and linen. They are cared for by the students occupying them.

BOARD. — All freshmen are required to board at the college dining hall. All women students living in college dormitories are required to board at the dining Hall.

The cost is \$255.00 for the college year payable as follows: at the opening of college \$78.00; December 1, \$65.00; February 1, \$60.00; April 1, \$52.00.

Rebates at the rate of \$6.00 per week may be granted for absences in excess of one week. No rebates will be allowed for absences of less than one week nor unless the absence is authorized by the Dean and the rebate approved by the Treasurer.

LABORATORY FEES.

The principles observed in establishing laboratory fees are the requirement that students pay for those materials actually used which cannot be supplied by the individual, and that the laboratory fees include a charge sufficient to guard against wanton waste and breakage. Fees may be established for any course without previous announcement. At present, the fees charged are as follows:

Agronomy:		Per Term.	Floriculture — <i>Concluded</i>		Per Term.
Course 25	.	\$2 25	Course 55	.	\$1 50
Course 27	.	2 25	Course 75	.	2 00
Course 50	.	2 50	Course 76	.	2 00
Course 51	.	2 50	Course 77	.	2 50
Course 75	.	2 25			
Course 77	.	2 50			
Animal husbandry:			Forestry:		
Course 25	.	1 50	Course 55	.	1 00
Course 26	.	1 50	Course 57	.	1 00
Course 75	.	1 50	Course 58	.	1 00
Dairying:			Landscape Gardening:		
Course 50	.	3 00	Course 30	.	2 50
Course 51	.	3 00	Course 50	.	2 50
Course 52	.	3 00	Course 51	.	2 50
Course 75	.	3 00	Course 52	.	2 50
Course 76	.	3 00	Course 76	.	3 00
Course 77	.	3 00	Course 77	.	3 00
Course 78	.	3 00	Course 80	.	3 00
			Course 81	.	3 00
			Course 82	.	3 00
Farm Management:			Pomology:		
Course 51	.	50	Course 54	.	4 00
			Course 75	.	4 00
Poultry Husbandry:			Vegetable Gardening:		
Course 51	.	2 50	Course 50	.	2 00
Course 52	.	3 00	Course 52	.	2 00
Course 76	.	2 00	Course 53	.	2 00
Course 77	.	2 00	Course 75	.	3 00
			Course 76	.	2 00
Agricultural Engineering:			Drawing:		
Course 27	.	1 00	Course 25	.	3 00
Course 30	.	1 50	Course 26	.	3 00
Course 53	.	1 00	Course 27	.	3 00
Course 55	.	1 00			
Course 75	.	1 00	Botany:		
Course 78	.	1 00	Course 3	.	1 50
			Course 25	.	1 50
Floriculture:			Course 26	.	1 50
Course 50	.	1 50	Course 50	.	2 00
Course 51	.	1 50	Course 51	.	2 00
Course 52	.	5 00	Course 52	.	2 00
Course 53	.	1 00	Course 53	.	2 00

Botany — *Concluded*

Per Term.

Course 54	\$2 00
Course 55	3 00
Course 58	1 50
Course 59	1 50
Course 60	1 50
Course 61	1 50
Course 62	1 50
Course 63	1 50
Course 75	3 00
Course 76	3 00
Course 77	3 00
Course 78	3 00
Course 79	3 00
Course 80	3 00

Chemistry:

Course 1	3 00
Course 2	3 00
Course 4	3 00
Course 5	3 00
Course 25	4 00
Course 26	4 00
Course 30	3 00
Course 51	5 00
Course 52	5 00
Course 53	5 00
Course 61	5 00
Course 62	5 00
Course 63	5 00
Course 75	5 00
Course 80	4 00
Course 81	5 00
Course 90	5 00
Course 91	5 00
Course 92	5 00
Course 93	5 00
Course 94	5 00
Course 95	5 00
Course 96	5 00
Course 97	5 00

Entomology:

Course 50	1 00
Course 51	1 00
Course 53	1 00
Course 55	1 00
Course 75	2 00
Course 76	3 00
Course 77	1 00
Course 78	3 00

Mathematics and Engineering: Per Term.

Course 27	\$1 50
Course 78	1 50

Microbiology:

Course 30	5 00
Course 50	5 00
Course 51	5 00
Course 52	5 00
Course 75	5 00
Course 76	5 00
Course 80	5 00
Course 81	5 00
Course 82	5 00
Course 83	5 00

Physics:

Course 25	3 00
Course 26	3 00
Course 27	3 00
Course 50	3 00
Course 51	3 00
Course 52	3 00

Veterinary Science:

Course 78	2 00
Course 79	2 00
Course 80	2 00
Course 85	2 00
Course 86	2 00
Course 87	2 00

Zoölogy:

Course 26	3 00
Course 50	3 00
Course 51	3 00
Course 52	3 00
Course 53	4 00
Course 75	3 00
Course 76	3 00
Course 77	3 00
Course 79	2 00

Music (each course)

3 00

Rural Home Life:

Course 28	1 50
Course 29	1 50
Course 32	1 50
Course 50	4 00
Course 51	4 00
Course 52	2 00
Course 61	1 50

INITIAL CHARGES.

At the opening of the college year, before students are registered in their classes, the following charges are payable at the treasurer's office:

	Freshmen.	Sophomores.	Juniors and Seniors.
Tuition (one term)	\$20 00	\$20 00	\$20 00
Matriculation fee	5 00	—	—
Board (if at college dining hall) to Dec. 1	78 00	78 00	78 00
Room rent (if in college dormitory)	12 00-20 00	12 00-20 00	12 00-20 00
Laboratory fees	5 00	5 00	2 00-10 00
Military uniform deposit	19 50	19 50	—
Assessment for support of Social Union	1 50	1 50	1 50
Student tax for support of athletics ¹	5 00	5 00	5 00
Student tax for support of academic activities ¹	3 00	3 00	3 00
Other student activities, taxes ¹	50	50	50

¹ While this is not essentially a college charge, the treasurer of the college acts as collector for the student activity, and all students are expected to make the payment as indicated. The subscription price of the "Collegian" is fixed by the managers; the amount of athletic tax by vote of the student body.

SUMMARY OF EXPENSES FOR YEAR.

Tuition: citizens of Massachusetts, \$60; others, \$180 per year.

	Low.	High.
Tuition (citizens of Mass.)	\$60 00	\$60 00
Matriculation fee (first year)	5 00	5 00
Room in college dormitories or in private houses	39 00	140 00
Board, \$8 per week (College Dining Hall)	255 00	255 00
Laundry, 50 to 85 cents a week	18 00	30 00
Laboratory fees	8 00	25 00
Books, stationery and miscellaneous items	40 00	60 00
	\$425 00	\$575 00

OTHER EXPENSES. — Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining a fraternity or entering into other social activities of the college. Students rooming in college dormitories are obliged to equip their own rooms with furniture. The college assumes no responsibility in regard to the safe-keeping of student property either during the college term or vacations, except under such special arrangement as may be made with the treasurer. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$500 and \$600 per year.

Student Accounts.

The following rules are enforced concerning student accounts:

No student will be allowed to graduate until all bills due the institution from him are paid.

College charges, such as room rent, laboratory fees and tuition, must be paid in advance, at the beginning of each term. This rule is strictly adhered to, and no student will be allowed to complete his registration until such payments are made.

Every student boarding at Draper Hall is required to pay at the beginning of each term at least one month's board in advance; and no student will be allowed to continue to board at Draper Hall if at any time during the term he is more than one week in arrears in his payment for board.

All money due for student labor shall at the discretion of the treasurer of the college be applied on account toward any bills that a student may owe to the institution.

Student Aid.

SELF-HELP. — Many students are obliged to find work of some sort to earn their way through college. A few men have met their entire expenses in this manner, many more have paid a large part of their expenses, and many have earned a small proportion of the cost of their college education; but the college recommends that no new student enter without having at least \$300 and preferably \$400 with which to pay his way until he can establish himself in some regular work. The college does not encourage students to enter without money in the expectation of earning their way entirely. The ordinary student will find it better to work and accumulate money before coming to college, or to take more than four years in completing his college course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work.

So far as possible needy students will be employed in some department of the college. The divisions of agriculture and horticulture usually afford the most work, although there are several permanent janitorships available for students, and forty or more students are employed at the dining hall.

Application for student labor should be made directly to Robert D. Hawley, Secretary of the college. Students whose department or class work is not satisfactory are not likely to be continued in student labor. The most desirable and responsible positions are naturally assigned to those needy students who have been in the institution longest and who have demonstrated their need and ability. Students, therefore, may find it rather difficult to obtain all the work they desire during their freshman year.

SPECIAL NOTICE TO NEEDY STUDENTS. — In the last few years the demand for paid labor on the part of new students has far exceeded the amount of employment that the college can offer. The college cannot promise work to any student, particularly to freshmen; it accordingly urges prospective students who are dependent entirely upon their own efforts not to undertake the course before they have earned enough money to carry them through, or nearly through, the first year.

Scholarships.

THE WARD FUND.

The so-called Ward Fund is available for the assistance of needy boys from Hampshire County attending the Massachusetts Agricultural College. This fund is administered by a Board of Trustees not connected with the College. Application blanks for assistance from this fund may be secured from the Treasurer of the College.

THE FREDERICK G. CRANE FUND.

The family of the late Frederick G. Crane of Dalton has presented to the Massachusetts Agricultural College a gift of \$25,000 to establish a fund in memory of Frederick G. Crane, the income therefrom to be expended by the Trustees in aid of worthy undergraduate four-year students of limited financial resources attending the College, preference being given to residents of Berkshire County. Grants made from this fund are to be known as Frederick G. Crane Scholarships.

Applications.

All applications for loans or gifts from this fund should be made to the President, Massachusetts Agricultural College, Amherst, Mass., under whose direction an investigation will be made of the merits of the applicants. The purpose of this investigation will be to insure that the aid is extended to students whose parents are in such financial condition that assistance is necessary in order to insure a college education for the applicants; that it is extended only to students who pro-

pose to complete their college education at the Massachusetts Agricultural College; and that it is given to those whose character and scholarship record justifies the assistance available through this fund.

Aid to Freshmen.

Grants from the Crane Fund will be made to freshmen in the form of loans supported by notes bearing indorsements satisfactory to the President of the College. These notes will bear interest and will be negotiable. The College, however, will at its discretion cancel these notes at the end of one year if the scholarship record of the student, his character, and his plans for the future appear to the President so to warrant.

Aid to Sophomores.

Grants will be made to sophomores either on the plan outlined for freshmen as given above or on the plan outlined for juniors and seniors as given below.

Aid to Juniors and Seniors.

Grants to juniors and seniors will usually be in the form of gifts and will be awarded with consideration of the need, of the scholarship, and of the character of the applicant.

Amount of Grants.

The amount of grants from this fund, made either as loans or as gifts, will be determined by the need of the applicant and by the amount of money available in the fund. Generally one may expect to receive from \$50 to \$150 per year.

Memorial Hall.

Soon after the close of the World War the alumni, students, faculty and friends of the college subscribed \$150,000 for the erection of a soldier memorial building to be placed on the college campus. This building was completed in the summer of 1921. It is designed to serve as headquarters for the student activities, and as the center of the social life of the institution.

In the basement are bowling alleys, pool tables, a store, post office and barber shop. On the main floor are eight offices for leaders of various student activities, a large reading room, and a beautiful memorial room in which is found the tablet bearing the names of the sons of the college who gave their lives in the great war. On the second floor is an auditorium seating 350 persons. This room is also used for college dances.

Honor Council.

All tests and examinations are conducted under the honor system, which is administered by an Honor Council chosen by the students. Recommendations for discipline are made to the President of the college by the Honor Council.

Student Relations.

The customary high standard of college men in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally

to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet, if in the judgment of the college authorities, a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

Infirmary.

The college maintains an infirmary for the care of sick or injured students.

Two small buildings, built especially for hospital purposes, are used for the infirmary.

The following statement outlines the plan followed in the management of the infirmary with respect to students:—

MANAGEMENT OF THE INFIRMARY.

Supervision.

1. The infirmary is under the *general supervision* of Prof. Charles E. Marshall, who is designated as Supervisor of the Infirmary. A resident nurse is in *immediate* charge of the infirmary.

Use of Infirmary.

2. Students are urged to go to the infirmary at any time that they are in need of the services rendered by the resident nurse or by a town physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that the majority of the students will go to the infirmary at his suggestion. This understanding, however, should in no way deter students from going to the infirmary voluntarily at any time.

General Health.

3. Students are urged to consult the physical director or the resident nurse immediately when signs of physical disorder appear. Severe attacks of cold or other forms of illness can usually be avoided if treatment is administered in the incipient stage. The purpose of the infirmary is to help maintain the general good health of the students, as well as to furnish a suitable place for professional attention in cases of severe illness or accident.

General Fee.

4. The infirmary fee will be at the rate of \$2 a day, and will be charged when one or more meals are obtained at the infirmary, or when the student remains at the infirmary for one or more nights. A nominal charge will be made to out-patients for miscellaneous treatment of a minor character.

Additional Expenses.

5. In addition to the fee charged, as specified in paragraph 4, the following additional expenses will be charged to the patient:—

(a) *Nurses.*— In case a special nurse is required for the proper care of an individual, the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) *Professional Service.*— If a student requires medical attention by a physician, he will be required to select his physician and become responsible for fees charged by the physician.

(c) *Supplies.* — Special medical supplies prescribed by a physician or nurse will be charged to the patient.

(d) *Laundry.* — Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

B. COLLEGE ACTIVITIES.

General Exercises.

Chapel exercises are held two mornings each week. On Thursdays during the fall term, and on Wednesdays during the winter and spring terms, an afternoon assembly is held, to which some prominent layman or professional man is invited to speak. The object of these assemblies is to bring to the students discussions of topics of present-day interest. A special chapel service on Sunday is held during the winter months. Students are required to attend these general exercises, although the president is authorized to excuse from chapel any student who may object to attendance thereon because of his religious scruples, provided his request for excuse therefrom is endorsed by his parent or guardian.

Student Activities.

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts Agricultural College Social Union was established in 1907. All students become members of the union by paying a small fee. In the fall and winter months the union gives a series of entertainments, free to students and faculty.

The College Senate is composed of representatives of the junior and senior classes. This body serves as a general director of undergraduate conduct, and represents before the faculty the interests of the student body.

The Young Men's Christian Association and the Young Women's Christian Association are active both socially and religiously.

Intercollegiate and intermural athletic contests are held throughout the year in the leading sports, including football, baseball, track, hockey and basketball. The athletic board, composed of alumni, faculty and students, has charge of finances, schedules, and general policies governing athletics.

The musical clubs include an orchestra, a glee club and a girls' glee club. These give a number of concerts, usually followed by dancing, during the year, both in Amherst and on tour. A dramatic club, The Roister Doisters, presents annually a revue and two plays, one in connection with the promenade and the other at commencement. There are, besides the declamation and oratorical prize contests, both class and intercollegiate debates.

The college publications are the "Massachusetts Collegian," the weekly newspaper; "The Index," the year book; and "The Alumni Bulletin," issued from the office of the alumni secretary. Judging teams under the direction of the departments of Animal Husbandry, Poultry Husbandry, Pomology and Floriculture compete with teams from other agricultural colleges. The Academic Activities Board, composed of alumni, faculty and students, has charge of the finances, schedules, etc., of the various clubs and publications.

Commencement.

Commencement exercises are directed by a committee composed of faculty, alumni and student representatives. The program includes a day devoted to undergraduate activities, an alumni day, Baccalaureate Sunday and Class Day. The second Sunday in June is fixed as the central date for commencement. The program for 1926 follows:

Friday, June 11: Undergraduate Day.

2-30 P.M. Freshman-Sophomore Baseball Game.

8-00 P.M. Flint Oratorical Contest, Memorial Hall.

Saturday, June 12: Alumni Day.

- 8-30 A.M. Baseball Game — Odds *v.* Evens.
- 10-00 A.M. Alumni Meeting, Memorial Hall.
- 12-00 M. Alumni Dinner, Draper Hall.
- 1-30 P.M. Band Concert and Alumni Addresses.
- 3-00 P.M. Alumni Parade.
- 3-30 P.M. Varsity Baseball Game, M. A. C. *v.* Amherst College.
- 6-00 P.M. Fraternity Reunions.
- 8-30 P.M. Dramatics, Bowker Auditorium.

Sunday, June 13: Baccalaureate Sunday.

- 9-00 A.M. Academics and Varsity Clubs Meetings.
- 1916-Faculty Breakfast.
- 3-30 P.M. Baccalaureate Address, Bowker Auditorium.
- 5-00 P.M. President's Reception, Rhododendron Garden.

Monday, June 14: Class Day.

- 9-00 A.M. Cavalry Drill.
- 10-30 A.M. Senior Class Day Exercises.
- 2-00 P.M. Commencement Exercises, Bowker Auditorium.
- 8-30 P.M. Sophomore-Senior Hop, Memorial Hall.

Alumni class reunions held by individual class arrangement.

C. ACADEMIC AND DEPARTMENTAL.**Degrees.**

Those who complete the four-year course receive the degree of bachelor of science. The fee for graduation from the college is \$5.

Graduate students who complete the assigned courses will receive the degree of master of science upon the payment of a fee of \$10. Credit may sometimes be allowed towards this degree for teaching or other advanced work done in some department of the college.

Graduate students who complete the required three-year course of study, and present a satisfactory thesis, will be granted the degree of doctor of philosophy. The diploma fee in this instance is \$25.

Those to whom degrees are awarded must present themselves in person at commencement to receive them. No honorary degrees are conferred.

The honorary fraternity of Phi Kappa Phi has a chapter at the college. Students are elected to membership to this fraternity on the basis of scholarship. Elections are made from the highest tenth of the senior class who have attained an average grade of at least 85 per cent during their college course.

Prizes and Awards, 1926.

Prizes and awards are offered annually in several departments for excellence in study or for other special achievements. Awards in 1926 were:

PHI KAPPA PHI ELECTIONS. — Those members of the senior class whose scholarship average has been 85% or above are eligible for election to the honorary Society of Phi Kappa Phi, not more than 10% of the class, however, being elected; elections from the class of 1926 were:

Elmer Everett Barber.	Alvah Wesley Jones.
Maude Elinor Bosworth.	Lawrence Lakin Jones.
Mary Turk Boyd.	Majel Margaret MacMasters.
Ernest Albert Dick.	Henry Howe Richardson.
Alton Herman Gustafson.	Margaret Park Smith.

GRINNELL PRIZES. — The Grinnell prizes, given by the Hon. William Claffin of Boston in honor of George B. Grinnell, Esq., of New York, for excellence in theoretical and practical agriculture. The contest is open to those senior students whose record on the registrar's books shows an average standing of 80 or above

for the technical work taken in the Divisions of Agriculture and Horticulture during the junior and senior years.

First Prize, \$25, Preston Julian Davenport.

Second Prize, \$15, Donald Reed Williams.

Third Prize, \$10, Albert Irving Mann.

HILLS BOTANICAL PRIZES. — The Hills Botanical Prizes, given by the late Henry F. Hills of Amherst for the best and second best herbaria. Competition is open to members of the senior, junior, and sophomore classes.

First Prize, \$20, Frances Clarinda Thompson, 1928.

BURNHAM PRIZES. — The Burnham prizes, awarded to the students delivering the best and second best declamations in the Burnham contest. The preliminary contests in declamation are open, under certain restrictions, to freshmen, and sophomores.

No awards in 1926.

FLINT PRIZES. — The Flint prize, awarded to the students delivering the best orations.

First Prize, \$30, Eliot Perkins Dodge, 1926.

Second Prize, \$15, Ralph Warner Haskins, 1927.

THE MASSACHUSETTS SOCIETY FOR THE PROMOTION OF AGRICULTURE. — The Massachusetts Society for the Promotion of Agriculture provided for 1926-1927 two prizes of \$300 each to be awarded to members of the class of 1927 for excellence in scholarship and two prizes of \$200 each to members of the class of 1928 who are majoring in the Divisions of Agriculture or Horticulture. Prizes of \$300: Clarence Howard Parsons, 1927, and Calton Oliver Cartwright, 1927. Prizes of \$200: Paul Frederick Frese, 1928 and Gordon Everett Bearse, 1928.

ALLAN LEON POND MEMORIAL MEDAL, FOR EXCELLENCE IN FOOTBALL. — The Allan Leon Pond Memorial Medal for general excellence in football in memory of Allan Leon Pond of the Class of 1920 who died February 26, 1920. In 1926 this medal was awarded to Alton Herman Gustafson, 1926.

SOUTHERN ALUMNI BASEBALL CUP. — The Southern Alumni Baseball Cup awarded to the member of the baseball team who contributed most to the success and reputation of the team, both in respect to skill and spirit. In 1926 this medal was awarded to John Burrington Temple, 1926.

ACADEMICS CONSPICUOUS SERVICE TROPHY. — The Academics Conspicuous Service Trophy awarded to the student who during the previous twelve months has made the most important single contribution to the academic activities. In 1926, awarded to Theodore James Grant of the Class of 1926.

ELDRED MEMORIAL PRIZE. — A prize established in honor of Frederick Cornelius Eldred, of the Class of 1873, famous oarsman and pioneer in athletics at M. A. C., who trained, coached and stroked crews in four intercollegiate races — two to victory. This prize of one hundred dollars may be awarded at Commencement to that member of the senior class who has represented the college in intercollegiate athletic contests for a period of not less than two years, and who has attained the highest average standing in scholarship during his course.

Philip Henry Couhig of the Class of 1926 was awarded \$50 in 1926 from this fund. This award was made upon the basis of the most constructive suggestion presented in written form for the physical development of the student body with particular reference to that portion which does not participate in major sports.

DEGREES CONFERRED—1926.

DOCTOR OF PHILOSOPHY (Ph.D.).

Sanborn, Joseph Raymond, B.Sc., Massachusetts Agricultural College . . . North Amherst.

MASTER OF SCIENCE (M.Sc.).

Bartlett, Frederick Sheldon, B.Sc., Massachusetts Agricultural College . . .	Westfield.
Cupery, Martin E., A.B., Hope College . . .	Friesland, Wis.
Foley, Mary Joan, B.Sc., Massachusetts Agricultural College . . .	Amherst.
Garabedian, Hovanes, B.A., International College, Smyrna . . .	Smyrna, Asia Minor.
Gilligan, Gerald Matthew, B.Sc., Massachusetts Agricultural College . . .	Amherst.
Lacroix, Donald Sewall, B.Sc., Massachusetts Agricultural College . . .	Amherst.
Lanphear, Marshall Olin, B.Sc., Massachusetts Agricultural College . . .	Amherst.
Percival, Gordon Pittinger, B.Sc., Massachusetts Agricultural College . . .	Medfield.

BACHELOR OF SCIENCE (B.Sc.).

Baker, Francis Everett . . .	Hopkinton.
Baker, Frederic Allen . . .	Springfield.
Barber, Elmer Everett . . .	Jamaica Plain.
Bartlett, Herbert Franklin . . .	West Springfield.
Benoit, Helen Anna . . .	Amherst.
Block, Harry William . . .	Maplewood.
Borgeson, Melvin Benjamin . . .	Auburn.
Bosworth, Marguerite Rose . . .	Holyoke.
Bosworth, Maude Elinor . . .	Holyoke.
Bower, James, Jr. . . .	Holyoke.
Boyd, Mary Turck . . .	Ortega, Fla.
Budge, William Karl . . .	Mattapan.
Burt, Stanley Lyman . . .	Easthampton.
Cassidy, Marion Stewart . . .	Wellesley.
Cormier, Francis Joseph . . .	Newtonville.
Couhig, Philip Henry . . .	Beverly.
Coveney, John Joseph . . .	Amherst.
Davis, Evelyn Louise . . .	Springfield.
DeVito, Dominick . . .	Roxbury.
Dick, Ernest Albert . . .	Lawrence.
Dodge, Eliot Perkins . . .	Beverly.
Doolittle, Alden Hartwell . . .	Northfield.
Douglass, Earle Lawrence . . .	Springfield.
Dow, Philip Norman . . .	Bolton.
Durkee, Lewis Leland . . .	Beverly.
Fessenden, Richard William . . .	Middleborough.
Fitzgerald, Lillian Alice . . .	Holyoke.
Flynn, Alan Foster . . .	Newton.
Ford, William Warner . . .	Dalton.
Fraser, Carl Arthur . . .	Westborough.
Fraser, Harry Edward . . .	Jamaica Plain.
Galbraith, Leo Lake . . .	South Hadley.
Gavin, Linus Arthur . . .	Natick.
Goodwin, Marvin Warren . . .	Reading.
Goren, Louis . . .	Chelsea.
Grant, Theodore James . . .	Auburndale.
Grayson, Herbert . . .	Milford.
Gustafson, Alton Herman . . .	Campello.
Haynes, Walter Lincoln . . .	Springfield.
Hill, Arthur Blair . . .	Walpole.
Hollingworth, Duncalf Wright . . .	Providence, R. I.
Howes, Stanley Edward . . .	Brimfield.
Huke, Barbara Allen . . .	South Hadley Falls.
Ingraham, Edward Forster . . .	Millis.
Jameson, Matthew . . .	Everett.
Jensen, Harold Stery . . .	Westfield.
Johnson, Philip . . .	Amherst.
Jones, Alvah Wesley . . .	Salisbury.
Jones, Lawrence Lakin . . .	Campello.
Kafanian, Sarkis Petros . . .	Amherst.
Kelso, George . . .	Reading.
Lambert, John Ford . . .	Gleasondale.
Langshaw, Hatton, Jr. . . .	New Bedford.
Larsinos, George John . . .	Westfield.

Loud, Emery Shaw	North Abington.
MacMasters, Majel Margaret	Ashburnham.
Mann, Albert Irving	Dalton.
Moberg, Herbert Elof	Brockton.
Moran, John	Amherst.
Needham, Basil Arthur	Taunton.
Nichols, Chester Willard	Natick.
Nichols, Helen Louise	Northampton.
Nickerson, Elsie Elizabeth	East Boston.
Norcross, Roy Ellis	Brimfield.
Novick, Leo Altshuler	Amherst.
Otto, Raymond Herman	Lawrence.
Palmer, Cary Davis	Grafton, Vt.
Pomeroy, Elisabeth Clark	Longmeadow.
Potter, Royal Wesley	Providence, R. I.
Putnam, Ruth Evelyn	Greenfield.
Reed, Charles Porter	West Bridgewater.
Richards, James Marsh	Springfield.
Richardson, Henry Howe	Millis.
Rowen, Edward Joseph	Westfield.
Sawyer, Roland Darrow, Jr.	Ware.
Shea, Margaret Catherine	Holyoke.
Smiley, Ray Guild	Worcester.
Smith, Margaret Park	Taunton.
Smith, Myron Newton	Millbury.
Smith, Raymond Ellingwood	Salem.
Sniffen, Loren Fallow	Westport, Conn.
Spooner, Raymond Hildreth	Brimfield.
Stevens, Alvin Gay	Needham.
Stopford, William Turner	Newtonville.
Sullivan, Charles Noyes	Fall River.
Sullivan, Donald Clifford	Amherst.
Sweetland, Augustus Francis	Stoneham.
Temple, John Burrington	Shelburne Falls.
Tetreault, Albert Joseph	New Bedford.
Thompson, Gerald Thayer	Shelburne Falls.
Thurlow, George Harold	West Newbury.
Tucker, Edwin Locke	Baldwinsville.
Tulenko, John	Sunderland.
Turner, Charles Edgar	Springfield.
VanAlstyne, Lewis Morrell	Kinderhook, N. Y.
Warren, Francis Walter	Stow.
Wheeler, Ellsworth Haines	Bolton.
White, Earl Martin	Abington.
White, Montague	West Hartford, Conn.
Williams, Donald Reed	Northfield.
Wilson, James Stewart	Brooklyn, N. Y.
Yarwood, George Arthur	Syracuse, N. Y.

BACHELOR OF VOCATIONAL AGRICULTURE (B.VOC.AGRI.).

Davenport, Preston Julian	Shelburne Falls.
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REGISTRATION, 1926-27.

AS OF NOVEMBER 1, 1926.

GRADUATE STUDENTS.

Archibald, John G.	North Amherst.
B.S.A., Ontario Agricultural College.	
M.Sc., Massachusetts Agricultural College.	
Arrington, Luther B.	Florence.
B.Sc., Massachusetts Agricultural College.	
Barber, Elmer E.	Jamaica Plain.
B.Sc., Massachusetts Agricultural College.	
Chesley, George L.	Concord, N. H.
B. Humanics, Springfield Y. M. C. A. College.	
Cossmann, Paul A.	Lunenburg, Nova Scotia.
B.S.A., Macdonald College.	Can.
Coubig, Philip H.	Beverly.
B.Sc., Massachusetts Agricultural College.	
Drain, Brooks D.	Amherst.
B.Sc., Ohio State University.	
M.Sc., University of Chicago.	
Dull, Malcolm	Muskegon, Mich.
A.B., Hope College.	
Fessenden, Richard W.	Middleborough.
B.Sc., Massachusetts Agricultural College.	
Foley, Mary J.	Amherst.
B.Sc., M.Sc., Massachusetts Agricultural College.	
France, Ralph L.	Wilmington, Del.
B.Sc., University of Delaware.	
Fuller, James E.	Amherst.
A.B., A.M., Colorado College.	
Garvey, Mary E. M.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Gates, Clifford O.	Kokomo, Ind.
B.S.A., Purdue University.	
Gavin, Linus A.	Natick.
B.Sc., Massachusetts Agricultural College.	
Goodwin, William I.	North Amherst.
B.Sc., Massachusetts Agricultural College.	
Hallowell, Elizabeth	Wollaston.
A.B., A.M., Boston University.	
Hamilton, W. Brooks	St. Lambert, Que., Can.
B.S.A., Macdonald College.	
Hawley, Henry C.	Amherst.
A.B., Oberlin College.	
M.B.A., Harvard Graduate School of Business Administration.	
Johnson, Loyal R.	Monte Vista, Col.
B.Sc., Colorado Agricultural College.	
Kelly, Oliver W.	Amherst.
B.Sc., Colorado Agricultural College.	
Landry, Herbert A.	West Springfield.
B.M.E., School of Engineering, Northeastern University.	
Larsinos, George J.	Westfield.
B.Sc., Massachusetts Agricultural College.	
MacMasters, Majel M.	Collinsville, Conn.
B.Sc., Massachusetts Agricultural College.	
Muller, Richard T.	Amherst.
B.Sc., Cornell University.	
M.Sc., University of Maine.	
O'Brien, Mary C.	Greenfield.
B.Sc.Educ., Normal Art School.	
Roberts, Oliver C.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Sagendorph, Richard S.	Spencer.
B.Sc., Dartmouth College.	
Salman, Kenneth A.	Needham.
B.Sc., Massachusetts Agricultural College.	
Sanctuary, William C.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Sazama, Robert F.	Northampton.
B.Sc., Massachusetts Agricultural College.	

Scheffer, William J.	Magyarovar, Hungary.
Dipl.Agric., Royal Hungarian Agri. Academy of Magyarovar.	
Dipl.Agric., State College of Agriculture, Berlin.	
Seymour, Frank C.	North Amherst.
A.B., Harvard University.	
B.D., Union Theological Seminary.	
Small, Alan F.	Worcester.
A.B., Bowdoin College.	
Spooner, Raymond H.	Brimfield.
B.Sc., Massachusetts Agricultural College.	
Springs, James D.	Merchantville, N. J.
B.A., Clark University.	
Swanback, T. Robert	North Amherst.
Agronom., Agricultural College of Ultuna, Sweden.	
Van Meter, Ralph A.	Amherst.
B.Sc., Ohio State University.	
Wagner, Bertha M.	Amherst.
B.S.S., Boston University.	

Registered after the Catalogue for 1925 was published.

Barrows, William B.	Amherst.
A.B., Columbia University.	
M.F., Yale University, School of Forestry.	
Bauer, John J.	New Bedford.
Ph.B., Brown University.	
Benoit, Helen A.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Brown, Paul W.	Fiskdale.
B.Sc., Massachusetts Agricultural College.	
Buchanan, Walter G.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Coveney, John	Amherst.
B.Sc., Massachusetts Agricultural College.	
Cowing, William A.	West Springfield.
A.B., Colby College.	
Drain, Brooks D.	Amherst.
B.Sc., Ohio State University.	
M.Sc., University of Chicago.	
Flynn, Alan F.	Newton.
B.Sc., Massachusetts Agricultural College.	
Fuller, James E.	Amherst.
A.B., A.M., Colorado College.	
Goodwin, Hope C.	North Amherst.
A.B., Brown University.	
Goodwin, William I.	North Amherst.
B.Sc., Massachusetts Agricultural College.	
Halloran, Elizabeth A.	Northampton.
A.B., Smith College.	
Hamilton, W. Brooks	St. Lambert, Que., Can.
B.S.A., Macdonald College of McGill University.	
Hammill, Edgar E.	Little Falls, N. J.
A.B., Amherst College.	
Hemenway, Justin S.	Williamsburg.
B.Sc., Massachusetts Agricultural College.	
Jack, Melvin C.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Keller, Paul	Boston.
B.Sc.Educ., Boston University.	
Kelly, Leslie M.	Amherst.
B.Sc.Educ., Bridgewater Normal School.	
Lacroix, Donald S.	East Wareham.
B.Sc., Massachusetts Agricultural College.	
Landry, Herbert A.	West Springfield.
B.M.E., School of Engineering, Northeastern University.	
Larkin, Clarence J.	Haydenville.
B.A., Amherst College.	
Levine, Sophie	Springfield.
Ph.G., Massachusetts College of Pharmacy.	
Locke, Christine B.	West Springfield.
A.B., Boston University.	
Lynch, Joseph C.	Taunton.
B.B.A., Boston University.	
Muller, Richard T.	Amherst.
B.Sc., Cornell University.	
M.Sc., University of Maine.	
O'Brien, Mary C.	Greenfield.
B.Sc.Educ., Normal Art School.	
O'Donnell, Mary E.	Northampton.
A.B., Smith College.	
Patch, Henry L.	Wenham.
B.Sc., Massachusetts Agricultural College.	
Pulley, Marion G.	Melrose.
B.Sc., Massachusetts Agricultural College.	
Rand, Lena Adams	Wethersfield, Conn.
B.A., M.A., Wesleyan University.	
Roberts, Oliver C.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Rorstrom, Hans A.	Northampton.
B.Sc., Massachusetts Agricultural College.	

Part II.

Rotunno, Noreda A.	Syracuse, N. Y.
B.S.A., M.Sc., Syracuse University.	
Salman, Kenneth A.	Needham.
B.Sc., Massachusetts Agricultural College.	
Sanborn, Ruby	Amherst.
A.B., Mount Holyoke College.	
Sanctuary, William C.	Amherst.
B.Sc., Massachusetts Agricultural College.	
Strong, Ruth A.	Amherst.
A.B., Smith College.	
Tower, Alfred L.	Sheffield.
B.Sc., Massachusetts Agricultural College.	
Tumey, Malcomb E.	Deerfield.
B.Sc., Massachusetts Agricultural College.	
Turner, Charles E.	Springfield.
B.Sc., Massachusetts Agricultural College.	
Woodbury, Samuel L.	Springfield.
B.Sc., Massachusetts Agricultural College.	

GRADUATE STUDENTS ENROLLED IN THE SUMMER SCHOOL.

Benoit, Helen A.	Amherst.
Buchanan, Walter G.	Amherst.
Coveney, John	Amherst.
Cowing, William A.	West Springfield.
Drain, Brooks D.	Amherst.
Flynn, Alan F.	Newton.
Fuller, James E.	Amherst.
Garvey, Mary E. M.	Amherst.
Goodwin, Hope C.	North Amherst.
Goodwin, William I.	North Amherst.
Halloran, Elizabeth A.	Northampton.
Hamilton, W. Brooks	St. Lambert, Que., Can.
Hemenway, Justin S.	Williamsburg.
Jack, Melvin C.	Amherst.
Kelly, Leslie M.	Amherst.
Kelly, Oliver W.	Amherst.
Linehan, Mary D.	Amherst.
McDonnell, Anna H.	Florence.
Mayo, William I., Jr.	Northampton.
O'Brien, Mary C.	Greenfield.
O'Donnell, Mary E.	Northampton.
Pulley, Marion G.	Melrose.
Rand, Lena Adams	Wethersfield, Conn.
Ross, Charles F.	Lee.
Rotunno, Noreda A.	Syracuse, N. Y.
Salman, Kenneth A.	Needham.
Strong, Ruth A.	Amherst.
Tower, Alfred L.	Sheffield.
Turner, Charles E.	Springfield.

CLASS OF 1927.

Ames, Robert Call	Falmouth	46 Pleasant Street.
Amstein, William Gerald	South Deerfield	Q. T. V.
Anderson, Andrew Bremer	Hudson	Lambda Chi Alpha.
Baker, Philip Woodell	Amherst	165 S. Pleasant Street.
Barnes, Russell Norris	Wallingford, Conn.	Sigma Phi Epsilon.
Biron, Raphael Alfred	Amesbury	Theta Chi.
Black, Lewis Herbert	Williamsburg	Alpha Gamma Rho.
Boden, Frank Joseph	North Wilbraham	29 North Prospect Street.
Bovarnick, Max	Dorchester	14 South College.
Briggs, Lawrence Elliott	Rockland	Theta Chi.
Bruce, Frances Clara	Easthampton	Abigail Adams House.
Buckler, Ella Maude	Pittsfield	Abigail Adams House.
Burrell, Robert Wallace	Abington	Theta Chi.
Campbell, Donald Hays	Shirley	Lambda Chi Alpha.
Carlson, Oscar Ernest	Boston	Kappa Epsilon.
Cartwright, Calton Oliver ¹	Northampton	Kappa Epsilon.
Chamberlain, Alexander Rodger	Springfield	Lambda Chi Alpha.
Clagg, Charles Floyd	Barnstable	Alpha Gamma Rho.
Cobb, Roger Madison	Wrentham	15 Hallock Street.
Connell, Edward Anthony	Malden	Sigma Phi Epsilon.
Cook, Wendell Burnham	Townsend	West Experiment Station.
Crooks, Clarence Arthur	North Brookfield	Alpha Gamma Rho.
Cummings, Maurice Andrew	Cambridge	Theta Chi.
Cutler, Samuel	Springfield	14 South College.
Davison, Ruth Eugenia	West Springfield	Abigail Adams House.
Dole, William Levi	Medford	Kappa Sigma.
Farwell, Theodore Austin	Turners Falls	Alpha Sigma Phi.
Foley, Richard Carol	Portland, Me.	Sigma Phi Epsilon.
Galanie, Demetrius Lincoln	Natick	Alpha Sigma Phi.
Goldberg, Louis Noah	Wilmington	13 South College.
Goller, Hilda Margaret	Holyoke	Abigail Adams House.
Goodell, Ruth Edna	Westborough	Abigail Adams House.
Greenaway, James Emerson	Springfield	Lambda Chi Alpha.
Greenwood, Elliott Kelton	Hubbardston	Q. T. V.

¹ Candidate for degree B.Voc.Agri.

Griffin, Raymond George	Southwick	Sigma Phi Epsilon.
Haertl, Edwin Jacob	West Roxbury	Kappa Sigma.
Hanson, Daniel Cameron	Dracut	Alpha Gamma Rho.
Harris, Herbert Joseph	Springfield	The Apiary.
Hart, Ralph Norwood	Dorchester	Alpha Gamma Rho.
Haskins, Ralph Warner	Greenfield	Q. T. V.
Hatch, George Franklin, Jr.	West Roxbury	Theta Chi.
Hatch, Harold Curtis	Melrose	53 Lincoln Avenue.
Henneberry, Thomas Vincent	Manchester	Phi Sigma Kappa.
Huthsteiner, Elladora Kathryn	Pittsfield	Abigail Adams House.
Ingraham, Mary	Millis	Abigail Adams House.
Kane, Thomas Joseph	Westfield	Q. T. V.
Krassovsky, Lencoid Alexander	Russia	Kappa Gamma Phi.
Kuzmeski, John William	Leverett	Amherst, R. F. D.
LeNoir, Thomas Benjamin	Greenwood	Alpha Sigma Phi.
Mahoney, John Joseph	Westfield	Q. T. V.
Malley, Joseph Anthony	Watertown	3 North College.
Maxwell, Lewis Joseph	Stoneham	Kappa Gamma Phi.
McAllister, Robert Wright	North Billerica	Alpha Gamma Rho.
McCabe, Edith Mary	Holyoke	Abigail Adams House.
McVey, Ernest Gregory	North Easton	Q. T. V.
Merlini, Angelo Albert	North Adams	Sigma Phi Epsilon.
Milligan, Kenneth William	State Line	Lambda Chi Alpha.
Mullen, Francis Redding	Becket	Sigma Phi Epsilon.
Murdough, Edwin Lincoln	Springfield	Lambda Chi Alpha.
Nash, Norman Blake	Abington	Kappa Sigma.
Nottebaert, Harry Charles	Lexington	Lambda Chi Alpha.
Parkin, William Hildreth	Chicopee	Kappa Epsilon.
Parsons, Clarence Howard	Amherst	North Amherst.
Parsons, Josiah Waite, Jr.	Northampton	Kappa Sigma.
Partenheimer, Merrill Henry	Greenfield	Phi Sigma Kappa.
Pearce, Veasey	East Weymouth	Phi Sigma Kappa.
Pickens, Herman Eames	Stoneham	Kappa Gamma Phi.
Pyle, Everett John	Plymouth	Theta Chi.
Reed, James Burbank	Waltham	Theta Chi.
Rhoades, Lawrence Duncan	New Marlborough	Alpha Gamma Rho.
Richter, Otto Hermann	Holyoke	Alpha Sigma Phi.
Rivnay, Ezekiel	Holyoke	56 Pleasant Street.
Robinson, Clifton Fairbanks	Newtonville	Q. T. V.
Robinson, Neil Cooley	Arlington Heights	Phi Sigma Kappa.
Russell, Charles Edwin	West Brookfield	Stockbridge Hall.
Savage, Donald Clifford	South Orange, N. J.	13 Phillips Street.
Sherman, Willis Whitney	Boston	Stockbridge Hall.
Snyder, Allan	Holyoke	Alpha Sigma Phi.
Spelman, Albert Francis	New London, Conn.	3 North College.
Swan, Frederick Walter	Milton	Q. T. V.
Thompson, Arthur Richard	West Bridgewater	83 Pleasant Street.
Verity, Herbert Foster	Woburn	Q. T. V.
Walker, Almeda Marion	Southbridge	Abigail Adams House.
Whitaker, Lewis Harlow	Hadley	Kappa Sigma.
White, John Everett	Abington	Kappa Sigma.
Wiggin, Jennie May	Worcester	Abigail Adams House.
Williams, Earl Fletcher	Whitinsville	Kappa Epsilon.

CLASS OF 1928.

Abrahamson, Howard Joseph	Waltham	Lambda Chi Alpha.
Allen, Leo Linwood Fenton ¹	Athol	Theta Chi.
Allen, Olive Elizabeth	Flushing, N. Y.	Abigail Adams House.
Amatt, Jack	Northampton	Kappa Sigma.
Barnard, Ellsworth	Shelburne Falls	Q. T. V.
Bartlett, Kenneth Alden	Dorchester	Aggie Inn.
Batchelder, Lora Margaret	Easthampton	Abigail Adams House.
Baumgartner, Hans	Pittsfield	11 South College.
Bearse, Gordon Everett	Sharon	Alpha Gamma Rho.
Beeman, Marjorie Elise	Ware	Mt. Pleasant.
Bradford, David Carlton	Springfield	Alpha Gamma Rho.
Bray, Frederick Roland	Amherst	44 High Street.
Bray, Walter Abner	Amherst	44 High Street.
Brockway, Horace Taylor, Jr.	South Hadley	Q. T. V.
Chapman, Dorothy Ann	Newtonville	Abigail Adams House.
Clark, Harold Eugene	Montague	East Experiment Station.
Cook, Albert Cairnes	Waverley	12 North College.
Cooke, Dorothy Mabel	Richmond	Abigail Adams House.
Crowley, Francis Jeremiah	Amherst	20 Woodside Avenue.
Cunningham, James Hugh	Quincy	Alpha Sigma Phi.
Davis, Richard Jackson	Arlington	7 North College.
Dean, Carolyn	Utica, N. Y.	Abigail Adams House.
Denton, Ian Oliphant	Norton	27 Fearing Street.
Draper, William Hill, Jr.	Watertown	Kappa Sigma.
Dresser, Horatio Malcom	South Hadley	Alpha Sigma Phi.
Elliott, Lawrence William	Waltham	Lambda Chi Alpha.
Evans, Joseph Andrew	Lawrence	Q. T. V.
Ewer, Seth Judson	Leyden	13 Phillips Street.
Ferguson, Thomas Wells, Jr.	Newton Highlands	Theta Chi.
Flemings, Frederic James	Sharon	Theta Chi.
Forest, Joseph Henry	Arlington	Alpha Gamma Rho.

¹ Candidate for degree of B.Voc.Agr.

Part II.

Fox, Robert Leo	Ware	Q. T. V.
Frese, Paul Frederick	Waltham	French Hall.
Gifford, Charles Edwin ¹	Sutton	Kappa Sigma.
Goldberg, Maxwell Henry	Stoneham	13 South College.
Hall, Harriet Phoebe	Great Barrington	Abigail Adams House.
Hall, John Stanley	Lynn	Alpha Gamma Rho.
Hodson, Alexander Carlton	Reading	Sigma Phi Epsilon.
Holland, Bertram Holbrook	Millis	Q. T. V.
Homeyer, Frank Fuller	Wellesley Farms	Theta Chi.
Howland, Walter Morton	Conway	Alpha Gamma Rho.
Hyde, William Eaton	Amherst	55 Pleasant Street.
Karrer, Robert Joseph	Hingham	Phi Sigma Kappa.
Kelton, Richard Coolidge	Hubbardston	10 North College.
Kennedy, Wellington Waterloo	Red Bank, N. J.	Kappa Epsilon.
Kidder, Dana Judson, Jr.	Fayville	Theta Chi.
Kimball, John Adams	Littleton	16 North College.
Ladas, Constantine Pericles	Boston	11 North College.
Lane, Donald Ricker	Brockton	7 North College.
LaPrise, Albert Joseph	Great Barrington	Lambda Chi Alpha.
Lassiter, Elizabeth Ruth	Holyoke	Abigail Adams House.
Laubenstein, Karl George	Maynard	1 North College.
Lawrence, Julia Ruth	Springfield	Abigail Adams House.
Leonard, Charles Smith	Chicopee	Lambda Chi Alpha.
Leonard, Dorothy Luella	West Springfield	Abigail Adams House.
Lincoln, Margaret Elizabeth	Shirley	Abigail Adams House.
Lincoln, Robert Alexander	Hingham Center	Theta Chi.
Little, Margaret Adams	Newburyport	Abigail Adams House.
Loring, Douglas Winthrop	Springfield	Phi Sigma Kappa.
Love, Elizabeth Perry	South Worcester	Abigail Adams House.
Marsh, Edwin Elliott	Pittsfield	Q. T. V.
Marston, Leon Chester, Jr.	Brockton	27 Fearing Street.
McEwen, Leslie Irving	Winchester	16 North College.
McGuire, Walter Kenneth	Whitinsville	3 North College.
Morey, Elizabeth Alma	Wollaston	Abigail Adams House.
Moriarty, Robert Earl	Monson	Alpha Gamma Rho.
Morland, Harold Laurud ¹	Islington	15 Phillips Street.
Morrill, Alfred Clayton	Natick	Phi Sigma Kappa.
Mulhern, Daniel Joseph	Roslindale	4 North College.
Murch, Ralph Gordon	Holliston	1 North College.
Noble, Frank Freeman ¹	Fall River	Q. T. V.
Nutting, John Lyman	West Berlin	Phi Sigma Kappa.
Owers, Robert Hammond	Taunton	Alpha Gamma Rho.
Panzica, Josephine	Arlington	Abigail Adams House.
Pickett, Thomas Austin	Beverly	84 Pleasant Street.
Plantinga, Oliver Samuel	Amherst	North East Street.
Plantinga, Sarah Theodora	Amherst	North East Street.
Pratt, Marjorie Johnson	Dalton	Abigail Adams House.
Preston, Charles Putnam	Hathorne	Kappa Sigma.
Preston, Stanley Nichols	Hathorne	Kappa Sigma.
Proctor, Harriet Ellise	South Weymouth	Abigail Adams House.
Quinn, John Francis	New Bedford	3 North College.
Redgrave, Arnold Ide	Hopedale	Phi Sigma Kappa.
Reed, Roland Ellsworth	Greenfield	Lambda Chi Alpha.
Rice, Cecil Curtis	Worcester	10 North College.
Ricker, Albion Barker	Turner, Me.	Lambda Chi Alpha.
Roper, Hartwell Eveleth	Closter, N. J.	Alpha Gamma Rho.
Ryan, Edward Parker	Swampscott	Kappa Gamma Phi.
Schappelle, Newell Allen	Amherst	25 Amity Street.
Schmidt, Ernest John	Longmeadow	Phi Sigma Kappa.
Smith, Charles James, Jr.	North Wilmington	Sigma Phi Epsilon.
Smith, Leslie Rockwell, Jr.	Hadley	Kappa Sigma.
Smith, Walter Russell	Holden	Alpha Gamma Rho.
Southgate, Barbara Willson	Sea View	Abigail Adams House.
Spencer, Ernest Leavitt	Lowell	Sigma Phi Epsilon.
Stratton, Frank	Boston	Alpha Gamma Rho.
Sullivan, Charles Burke	Fall River	16 South College.
Thomas, Howard	Holyoke	16 North College.
Thompson, Frances Clarinda	Amherst	Mt. Pleasant.
Thompson, Leonard Lewis	Greenfield	12 North College.
Trull, Henry Bailey	Lowell	Sigma Phi Epsilon.
Tufts, Warren John	Jamaica Plain	15 North College.
Tulloch, George Sherlock	Bridgewater	Q. T. V.
Tuttle, Alden Parker	Bellingham	Baker Place.
Van Hall, Walter Bernhardt	Roslindale	Alpha Sigma Phi.
Voetsch, George Bernard	Greenfield	Sigma Phi Epsilon.
White, Edwin Searles	Worcester	1 North College.
Wilder, Edwin Arthur	Sterling Jct.	Phi Sigma Kappa.
Williams, Florence Dorothea	East Norton	Abigail Adams House.
Worssam, Horace Herbert	Barnardston	Q. T. V.

CLASS OF 1929.

Adams, Buel Thompson	Dalton	Phi Sigma Kappa.
Adams, Harold Sweetnam ²	Whitinsville	Alpha Gamma Rho.
Adams, Stephen ¹	Easthampton	M. A. C. Bungalow.
Alberti, Francis Daniels	Greenfield	22 Fearing Street.

¹ Candidate for degree of B.Voc.Agri.² Admitted on probation; entrance record incomplete.

Ansell, Harold King	Amherst	Kappa Sigma.
Avery, Blanche Deane	Greenfield	Abigail Adams House.
Bailey, Stanley Fuller	Middleborough	2 North College.
Barr, Charles Wesley	Pittsburgh, Pa.	Lambda Chi Alpha.
Bartlett, Irene Lawrence	Rowley	Abigail Adams House.
Bates, Ira Spaulding	Whitinsville	5 Tillson Court.
Berman, Hyman	Woburn	15 South College.
Bern, Philip	Roxbury	14 South College.
Bertenshaw, Edith Louise	Fall River	Abigail Adams House.
Black, Chesley Leman	Reading	97 Pleasant Street.
Blaisdell, Matthew Louis	South Ashfield	Sunderland.
Bliss, Lois Anne	Springfield	Abigail Adams House.
Bond, James Eaton, Jr.	South Lancaster	Alpha Gamma Rho.
Bowie, Robert Lester	East Milton	6 North College.
Brackley, Floyd Earle	Strong, Me.	Alpha Sigma Phi.
Burgess, Emory Dwight	Melrose	Phi Sigma Kappa.
Canney, George Gridley	South Hadley	81 Pleasant Street.
Carlson, Julius Anselm	Brockton	Kappa Sigma.
Carruth, Laurence Adams ¹	Worcester	75 Pleasant Street.
Carter, Warner Harris	Amherst	Amherst, R. F. D.
Chadwick, John Shore	Worcester	Lambda Chi Alpha.
Chapin, Alice Streeter	Sheffield	Abigail Adams House.
Church, Cernelia Bassett	Amherst	North Amherst.
Cleaves, Charles Shepley	Gardner	Phi Sigma Kappa.
Clements, Charles Robert Crofford	Melrose	Phi Sigma Kappa.
Collins, Edgar Winslow	Braintree	Alpha Sigma Phi.
Comins, Lawrence Albert	Millers Falls	West Experiment Station.
Cook, Florence Mary	Hadley	Abigail Adams House.
Copson, Harry Rollason	Easthampton	18 Chapman Avenue,
		Easthampton.
Coukos, Andrew ¹	Lynn	Kappa Gamma Phi.
Cox, Adelbert Winters	Framingham	9 South College.
Crowley, Dennis Michael	Boston	French Hall.
Davis, Donald Austin	Bedford	21 Fearing Street.
Davis, Kendall Edgar	Springfield	Sigma Phi Epsilon.
Dawe, Ralph Turner	North Adams	Theta Chi.
Day, William Albert Palmer	Watertown	9 Phillips Street.
Devine, John Warren	Arlington	Alpha Gamma Rho.
Dutton, George Wallace	Carlisle	Alpha Gamma Rho.
Dyer, Arnold Walton	Falmouth	Theta Chi.
Eager, Vincent Shattuck	Berlin	Experiment Station
		Farmhouse.
Edson, William Gordon ¹	East Braintree	84 Pleasant Street.
Egan, William Ambrose	Springfield	Sigma Phi Epsilon.
Faulk, Ruth Adelaide	Brockton	Abigail Adams House.
Flint, George Bemis	Lincoln	Q. T. V.
Fonseca, Martin Goodman	Allston	M. A. C. Farmhouse.
Fontaine, Mildred	Fall River	Abigail Adams House.
Foster, Thomas William	Sherborn	9 South College.
Frost, Charles Austin	Belmont	15 North College.
Gagliarducci, Anthony Lewis	Springfield	Kappa Epsilon.
Graves, Arthur Hall ¹	Ashfield	Q. T. V.
Grover, Richard Whiting	Cambridge	Alpha Sigma Phi.
Hairston, Jester Joseph	Boston	Colonial Inn.
Hammond, Marjorie Allerton	Onset	Abigail Adams House.
Harrington, Mary Eileen	Holyoke	Abigail Adams House.
Harris, Robert Henry	Greenfield	53 Lincoln Avenue.
Harvey, Herman Chapin	Amherst	9 Spring Street.
Hawley, Guila Grey	Westfield	Abigail Adams House.
Henderson, Everett Spencer	West Hartford, Conn.	3 Nutting Avenue.
Hintze, Roger Thomas	Amherst	Aggie Inn.
Horan, Timothy Joseph	Whitinsville	4 North College.
Howe, Frank Irving, Jr.	Norfolk	Theta Chi.
Hunter, Walter Gordon	South Sudbury	Stockbridge Hall.
Huss, Miriam Hall	Newton Center	Abigail Adams House.
Johnson, Alice Luvanne	Holden	Abigail Adams House.
Johnson, Clifton Russell	Worcester	2 North College.
Jones, Leroy Osgood	Greenfield	12 South College.
Kane, Mary Catherine	Holyoke	Abigail Adams House.
Kay, John Reid	Boston	Kappa Sigma.
Kelley, Charles Edward	Dalton	Phi Sigma Kappa.
Kinney, Asa Foster	South Hadley	9 South College.
Kreienbaum, Roman Albert	Bridgewater	Q. T. V.
Lyman, Warren Hills Grove ¹	Florence	21 Fearing Street.
Lynch, Elizabeth Anne	Easthampton	Abigail Adams House.
Lynsky, Myer	Boston	9 Fearing Street.
Marsh, Kendall Howe	Holden	Alpha Gamma Rho.
Marx, Walter Herman	Holyoke	10 South College.
McKay, Catherine Mary	Newtonville	Abigail Adams House.
McKittrick, Kenneth Fraser	Boston	Kappa Sigma.
Mills, Taylor Mark	Boston	Kappa Sigma.
Minsuk, Henry George	Springfield	13 South College.
Moore, Ethan Dana	West Springfield	Alpha Gamma Rho.
Morrison, Leonard William	Monson	22 Fearing Street.
Morse, Emily Albertina	Waban	Abigail Adams House.
Nash, Robley Wilson	Abington	11 South College.
Nichols, Edward Holyoke	Montpelier, Vt.	Kappa Sigma.

¹ Candidate for degree of B.Voc.Agri.

Part II.

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Nitkiewicz, Boleslaw	Holyoke	Kappa Epsilon.
O'Leary, William Joseph	Northampton	Kappa Gamma Phi.
Packard, Faith Evelyn	Windsor	Abigail Adams House.
Parrish, Ruth Harriet	Great Barrington	Abigail Adams House.
Patterson, Jane	Amherst	26 Lincoln Avenue.
Pease, Holton Stebbins	Hampden	Theta Chi.
Perkins, Esther Janet	Easthampton	Abigail Adams House.
Perry, Kenneth William	Holliston	Sigma Phi Epsilon.
Phinney, William Rolland	Williamansett	7 McClellan Street.
Plumer, Paul Raymond	Adams	Theta Chi.
Poltenson, Hyman Isadore	Springfield	9 North College.
Pozzi, Joseph John	North Adams	Sigma Phi Epsilon.
Prouty, Earl Clinton	Mittineague	Kappa Gamma Phi.
Rees, Robert Drake	Newton	Alpha Sigma Phi.
Regan, John Michael	Holyoke	83 Pleasant Street.
Rice, Louise Trask	Greenfield	Abigail Adams House.
Rich, Kenneth Merton	Danvers	Q. T. V.
Richards, Lawrence Edward	Dalton	Phi Sigma Kappa.
Richardson, Evan Carleton	Millis	84 Pleasant Street.
Robertson, William Brunner	Port Chester, N. Y.	Phi Sigma Kappa.
Rudquist, Birger John	Boston	83 Pleasant Street.
Rutan, Huntington	North Hadley	North Hadley.
Sargent, Carmeta Elizabeth	Shrewsbury	Abigail Adams House.
Sargent, Leonard Fessenden Everett	Greenfield	12 South College.
Sevrens, Harvey William	Greenfield	53 Lincoln Avenue.
Shuman, Ernest Clark	Malden	Kappa Gamma Phi.
Simcovitz, Robert	Springfield	9 North College.
Sivert, Gladys Elizabeth ¹	Worcester	Abigail Adams House.
Slack, Grace Gertrude	Allston	Abigail Adams House.
Smith, Bessie May	West Somerville	Abigail Adams House.
Snell, Robert Sinclair	Southbridge	Care of Mr. Kneeland.
Soper, Carolyn Emma	Shelburne Falls	Abigail Adams House.
Southwick, Walter Edward	Clinton	75 Pleasant Street.
Steere, Phillips Bradley	Chepachet, R. I.	Phi Sigma Kappa.
Steinbugler, Elizabeth Anne	Brooklyn, N. Y.	Abigail Adams House.
Sullivan, John Ayer	Medford	16 South College.
Tarr, Roy Simpson	Gloucester	8 North College.
Thayer, Frederick Daniels, Jr.	Shrewsbury	Kappa Sigma.
Tompkins, Earle Alexander	Easthampton	81 Pleasant Street.
Tourtellot, Clarence Sampson	Providence, R. I.	83 Pleasant Street.
Trevett, Moody Francis	Milford	9 Phillips Street.
Vartanian, Dickran	Springfield	11 North College.
Vaughan, Herbert Sidney	Attleboro	Theta Chi.
Verner, Charles Edward	Millers Falls	13 North College.
Walkden, Charles Edward	Swansea	Q. T. V.
Walker, Lewell Seth, Jr.	Amherst	19 Phillips Street.
Ward, Stuart Houghton	Greenfield	Lambda Chi Alpha.
Webber, Dana Otis	Montague	Colonial Inn.
White, Lawrence Henry	Amherst	42 High Street.
Whitten, Russell Rutherford	Melrose	Lambda Chi Alpha.
Whittle, Doris Evelyn	Worcester	Abigail Adams House.
Williams, Lloyd George	Pittsfield	Kappa Epsilon.
Winton, Alexander Charles	Springfield	Kappa Epsilon.
Woodbury, John Sargent	Fitchburg	Alpha Sigma Phi.
Young, Prescott Davenport	North Grafton	3 McClure Street.
Zielinski, John Blaise, Jr.	Holyoke	83 Pleasant Street.

CLASS OF 1930.

Adams, Charles Streeter	Worcester	21 Fearing Street.
Allen, Herbert Adams	Fitchburg	9 North College.
Allen, Raymond Clayton	Holden	3 Nutting Avenue.
Andrew, John Albion, Jr.	West Boxford	10 Nutting Avenue.
Armstrong, Robert Lindsey	East Sandwich	60 Pleasant Street.
Atwood, Rachel	Greenfield	Abigail Adams House.
Babson, Osman	Gloucester	Mt. Pleasant.
Bailey, Headley Edmund	Lucea, Jamaica, B. W. I.	101 Pleasant Street.
Barney, George Hillman	Hamilton	42 Lincoln Avenue.
Barrus, George Alvan ²	Lithia	51 Amity Street.
Bartsch, Nelson Edgar	Waverley	86 Pleasant Street.
Bedford, Harry	Whitinsville	5 Tillson Court.
Benoit, Edward George	Chicopee Falls	14 North College.
Bergan, Carl Augustus	Northampton	70 Lincoln Avenue.
Berggren, Stina Matilda	Worcester	Abigail Adams House.
Bernard, Sergius Joseph	North Adams	35 Lincoln Avenue.
Billings, Samuel Clark	Belmont	86 Pleasant Street.
Bishop, Frank Millard	Natick	83 Pleasant Street.
Blackinton, John Roswell	Little Compton, R. I.	81 Pleasant Street.
Bond, Richard Henry, Jr.	Needham	Colonial Inn.
Brown, Jessie Elizabeth	Fitchburg	Abigail Adams House.
Brown, Mildred Shepard	North Amherst	North Amherst.
Brown, Phillips Cornelius ²	Framingham	17 Phillips Street.
Buckler, May Frances	Pittsfield	Abigail Adams House.
Burbank, Oscar Frank, Jr.	Worcester	30 Fearing Street.
Burns, Theodore Chandler	Taunton	75 Pleasant Street.
Call, Reuben Hillman	Colrain	3 McClure Street.

¹ Candidate for degree of B.Voc.Agr.

² Admitted on probation, entrance record incomplete.

Campbell, Harold Vining	Leyden	53 Lincoln Avenue.
Chenoweth, Winifred Lee	North Amherst	North Amherst.
Cleveland, Maurice Mortimer	East Pepperell	97 Pleasant Street.
Cook, Charles Hardy	Beverly	81 Pleasant Street.
Cotter, Monica Quill	Somerville	Abigail Adams House.
Coven, Milton Isadore	Indian Orchard	15 South College.
Cox, Charles Bartlett ¹	Jamaica Plain	29 North Prospect Street.
Crane, Kendall Buck	Milbury	18 Nutting Avenue.
Cunningham, Robert Grey	Quincy	10 North College.
Daniels, Arthur Richards ¹	Dedham	97 Pleasant Street.
Davis, Arnold Mearns	Berlin	5 North College.
Dean, Lucien Wesley	Millis	4 Nutting Avenue.
Decker, Charlotte Marthe	Holyoke	25 Fearing Street.
Denny, Myrtle Althea	Northampton	54 Pleasant Street.
Denton, Edward Wemyss	Norton	33 East Pleasant Street.
Dickey, Robert Ira	Merrimac	50 Pleasant Street.
Dix, Raymond Arthur	North Springfield, Vt.	15 Fearing Street.
Donovan, Margaret Pauline	Bondsville	Abigail Adams House.
Dorey, Albert Frank	Belchertown	Belchertown.
Dover, Evelyn	Methuen	Abigail Adams House.
Drew, William Brooks	Greenwich, Conn.	53 Lincoln Avenue.
Eldridge, Francis Kennett ²	Georgetown	47 East Pleasant Street.
Ellert, Fred Charles	Holyoke	10 South College.
Fenton, John Hopkins	Winthrop	4 Chestnut Street.
Franklin, Paul Lawrence ¹	Springfield	83 Pleasant Street.
Gaumont, Alice Delimen	Southbridge	Abigail Adams House.
Giamdomenico, Stephen	Walpole	7 Phillips Street.
Glick, Ina Ervin	Amherst	27 Fearing Street.
Goldberg, Max Charles	Malden	15 South College.
Goodell, Herbert Andrew	Southbridge	42 Cottage Street.
Goodell, Hermon Ulvress	Southbridge	42 Cottage Street.
Goodnow, Robert Gibson	Hopedale	Exp. Sta. Farmhouse.
Grant, William Edward ¹	Boston	17 Triangle Street.
Grunwaldt, Lucy Antoinette	Springfield	Abigail Adams House.
Gunn, Ralph Ellis	South Jacksonville, Fla.	33 East Pleasant Street.
Hale, Henry Fales	Jamaica Plain	84 Pleasant Street.
Haley, Edward Fowler	Orange	17 Phillips Street.
Hall, Addison Smith	Ashfield	53 Lincoln Avenue.
Hammond, Clarence Elliot	Needham	18 Nutting Avenue.
Harris, Charles Whitcomb, Jr.	Leominster	3 Hallock Street.
Haubenreiser, Elsie Martha	Springfield	Abigail Adams House.
Hernan, Richard Alden	Gilbertville	61 Amity Street.
Hetherington, Thomas	Adams	75 Pleasant Street.
Hinchey, Anne Elizabeth	Palmer	Abigail Adams House.
Horwitt, Leonard ¹	Brooklyn, N. Y.	86 Pleasant Street.
Howard, John Brooks, Jr.	Reading	97 Pleasant Street.
Howard, Lucius Alexander	Ridgewood, N. J.	13 North College.
Howard, Martin Stoddard	Northfield, Vt.	97 Pleasant Street.
Howe, Norman Manwaring	Greenfield	35 Lincoln Avenue.
Hunt, Kenneth Whitten	Arlington	Farmhouse.
Hunter, Howard William	Holyoke	83 Pleasant Street.
Ives, Kenneth Gage	Amherst	West Street.
Jacobson, John	North Dartmouth	4 Nutting Avenue.
Jensen, Henry Wilhelm	Jamaica Plain	14 North College.
Johnson, Catharine Genevieve	Amherst	Eames Avenue.
Jones, Fred William	Amherst	137 South Pleasant Street.
Joy, John Leo William	Amherst	3 High Street.
Kempt, Harry Charles	Eastham	Baker Place.
Kingsbury, Kermit Kenton	Leominster	3 Hallock Street.
Kneeland, Ralph Folger, Jr.	Attleboro	83 Pleasant Street.
Knight, Kathryn Rachel	Greenfield	Abigail Adams House.
Labarge, Robert Rolland	Holyoke	15 Phillips Street.
Lake, Walter Sidelinger	Plainville	Care of Prof. Banta, Sun- set Avenue.
Lawlor, John Thomas, Jr.	Marblehead	86 Pleasant Street.
Leader, Anthony William	Worcester	8 Allen Street.
Leonard, John Morris	Fall River	14 Nutting Avenue.
Loomis, Randall Miller	Easthampton	22 Pleasant Street, East- hampton.
Loud, Miriam Johnson	Plainfield	Abigail Adams House.
Lynds, Lewis Malcolm	Taunton	75 Pleasant Street.
MacCausland, Mabel Alice	West Newton	Abigail Adams House.
Madden, Archie Hugh ¹	Amherst	79 Main Street.
Mann, Raymond Simmons	Dalton	9 Phillips Street.
Marcus, Theodore	Roxbury	15 South College.
Maylott, Gertrude	Worcester	Abigail Adams House.
McChesney, Herbert Lewis ²	West Springfield	31 Lincoln Avenue.
McIsaac, Donald Weston ²	East Weymouth	30 Fearing Street.
Miller, Walter Edward	Bethany, Conn.	29 No. Prospect Street.
Morawski, Earle Leo	Attleboro	83 Pleasant Street.
Morgan, Isabel Elvira	Schenectady, N. Y.	Abigail Adams House.
Morse, Beryl Florence	Southbridge	Abigail Adams House.
Mullen, Edwin Joseph	Holyoke	83 Pleasant Street.
Murphy, Donald Fraser	Lynn	13 Phillips Street.
Nelson, Gordon	Rosindale	56 Pleasant Street.
Nims, Russell Everett	Greenfield	Colonial Inn.

¹ Admitted on probation, entrance record incomplete.² Candidate for degree of B.Voc.Agr.

Part II.

Noble, George Watson ¹	Pittsfield	9 Phillips Street.
Noyes, George Hazen	Haverhill	86 Pleasant Street.
O'Connor, Eileen	Worcester	Abigail Adams House.
Pagliaro, Sylvester	Mittineague	Baker Place.
Paksarian, John Paul	Franklin	8 Allen Street.
Parks, Stillman Harding	Gloucester	8 North College.
Patch, Eldred Keene	Stoneham	97 Pleasant Street.
Paulson, John Edward	Holyoke	Kappa Epsilon.
Phinney, Paul Tirrell	Hyde Park	22 Sunset Avenue.
Phinney, Wallace Sanford	Williamansett	7 McClellan Street.
Pillsbury, William Gale	Amesbury	81 Pleasant Street.
Pollin, Ida Edith	Sheffield	Abigail Adams House.
Pottala, Arne Eric	Fitchburg	15 Fearing Street.
Potter, Stuart Hamilton	Framingham	Farmhouse.
Pray, Francis Civile	Amherst	22 Sunset Avenue.
Purdy, Wilfred George	Merrimac	50 Pleasant Street.
Pyle, Arthur Guard	Plymouth	7 Phillips Street.
Raplus, Harry Edward	Agawam	97 Pleasant Street.
Renaud, Hector Holmes	Walpole	15 Fearing Street.
Riley, Vincent Joseph	Somerset	81 Pleasant Street.
Robertson, Harold Miner	Leyden	The Davenport.
Ronka, Lauri Samuel ¹	Gloucester	8 North College.
Root, John Cushman	Plainville	15 Hallock Street.
Roper, Harold John	Westminster	3 Hallock Street.
Rosa, Albert Ulysses	East Boston	
Rurak, John Walter	Greenfield	60 Pleasant Street.
Salikorn, Lamchiag Joti	Siam	86 Pleasant Street.
Sanborn, Alice Geneva	Attleboro	Abigail Adams House.
Sandstrom, Evelyn Cecelia	Auburn	Abigail Adams House.
Saraceni, Raphael	Lynn	13 Phillips Street.
Schantz, Joseph Harvey	Allentown, Pa.	86 Pleasant Street.
Scrima, Paul Andres	Monson	Baker Place.
Sederquist, Arthur Butman, Jr.	Auburndale	45 Pleasant Street.
Shepard, Moody Lawrence ²	West Boylston	3 Nutting Avenue.
Singleton, Eric	Brooklyn, N. Y.	35 Lincoln Avenue.
Sirois, John Joseph ¹	Andover	35 Lincoln Avenue.
Skogsberg, Frank Albert ²	Worcester	3 Nutting Avenue.
Sleeper, Ralph Emerton	Rowley	13 Phillips Street.
Smith, Raymond Francis	Needham	Colonial Inn.
Smith, Reginald DeWitt ¹	West Springfield	31 Lincoln Avenue.
Smith, Winthrop Grant	Needham Heights	83 Pleasant Street.
Spooner, Laurence Whipple	Brimfield	20 Lessey Street.
Stacy, Paul	Webster	17 Phillips Street.
Stanford, Spencer Clarendon	Rowe	22 Sunset Avenue.
Stanisiewski, Leon	Amherst	Triangle Street.
Stevenson, Errol Burton	Brockton	86 Pleasant Street.
Stone, Ruth Winifred	Holyoke	Abigail Adams House.
Suher, Maurice	Holyoke	56 Pleasant Street.
Sullivan, Pauline Eugenia ¹	Bangor, Me.	Abigail Adams House.
Sullivan, William Nicholas, Jr.	Lawrence	5 North College.
Swett, Margaret Elizabeth	Gloucester	Abigail Adams House.
Swift, Frances Harrington	Springfield	Abigail Adams House.
Swift, Gilbert Dean	Melrose	54 Lincoln Avenue.
Taft, Jesse Alderman	Mendon	Exp. Sta. Farm House.
Taft, Roger Sherman	Sterling	Care of E. F. Gaskill.
Tank, John Richard	Chatham, N. Y.	15 Phillips Street.
Thatcher, Christine Belle	Cummington	33 Lincoln Avenue.
Tiffany, Don Cecil	Cambridge	83 Pleasant Street.
Tilton, Arthur Francis, Jr.	Salem	21 Fearing Street.
Tomfohrde, Karl Martin	West Somerville	3 Hallock Street.
Tudryn, Edward William	Hadley	21 Fearing Street.
Wadleigh, Cecil Herbert	Milford	Exp. Sta. Farm House.
Waechter, Peter Hansen, Jr.	Walpole	15 Fearing Street.
Warren, Allen Johnson	New Haven, Conn.	45 Pleasant Street.
Wells, Marie Evelyn	Pugwash, Nova Scotia	Abigail Adams House.
White, Frank Tisdale, Jr.	Holbrook	81 Pleasant Street.
White, Harold James	Brighton	11 South College.
Williams, Inez Wilhelmina	Brockton	Abigail Adams House.
Wood, Priscilla Grover	West Bridgewater	Abigail Adams House.
Woodcock, Alfred Herbert	Daytona Beach, Fla.	45 Pleasant Street.
Woodin, Elizabeth Marie	Adams	Abigail Adams House.
Yeatman, Alwyn Frederick	Springfield	66 Pleasant Street.
Young, Edward Henry	Northampton	84 Pleasant Street.
Zuger, Albert Peter	New Haven, Conn.	4 Chestnut Street.

SPECIAL STUDENTS.

Crabbe, Daniel McEwen	Toms River, N. J.	The Davenport.
Nerney, Norbert Joseph	Attleboro	Baker Place.
Payne, Donald Tubbs	Dunstable	8 Allen Street.
Safra, Mayer	Malden	56 Pleasant Street.

REGISTERED AFTER CATALOGUE FOR 1926 WAS PUBLISHED.

1926.

Buckley, Arthur Vincent Natick.

¹ Admitted on probation, entrance record incomplete.² Candidate for degree of B.Voc Agri.

SPECIAL STUDENTS.

Arthur, May G.	.	.	.	.	.	.	.	.	.	Northampton.
Campbell, Frederic Lloyd	.	.	.	.	.	.	.	.	.	St. John, N. B.
Cutler, Walter Leon	.	.	.	.	.	.	.	.	.	Amherst.
Denny, Iva	.	.	.	.	.	.	.	.	.	Northampton.
Kilpatrick, Charles J.	.	.	.	.	.	.	.	.	.	Northampton.
Lundblad, Carl A.	.	.	.	.	.	.	.	.	.	Northampton.
Peabody, Robert W.	.	.	.	.	.	.	.	.	.	Waverley.

SUMMARY BY CLASSES.

CLASS.	Men.	Women.	Total.
Graduate students	33	6	39
Seniors, 1927	77	10	87
Juniors, 1928	89	21	110
Sophomores, 1929	115	30	145
Freshmen, 1930	150	35	185
Specials	4	-	4
Totals	468	102	570

GEOGRAPHICAL SUMMARY.

Massachusetts	522	Michigan	1
Rhode Island	3	Indiana	1
Connecticut	8	Florida	2
Maine	4	Canada	3
Vermont	3	British West Indies	1
New Hampshire	1	Hungary	1
New York	8	Russia	1
New Jersey	6	Siam	1
Delaware	1		
Pennsylvania	2	Total	570
Colorado	1		

SHORT COURSE ENROLLMENT.

TWO-YEAR GRADUATES, 1926.

Adam, Samuel S.	Swansea.
Alcott, Elverton Hunting	Brookline.
Ames, Bessie Bell	Center Marshfield.
Anderson, Frederic	Grafton.
Apelquist, Philip Eugene	Orange.
Bassett, Sherrold Emerton	Everett.
Blood, Charles Andrew Fletcher	Pepperell.
Bradley, Howard Courtland	Seekonk.
Brown, Charles Franklin	Worcester.
Burgevin, Paul Louis	Port Chester, N. Y.
Clapp, Irving Miller	Northampton.
Clark, Stewart Floyd	Conway.
Cogswell, Sarah Ellen	Westborough.
Crocker, Ralph Herman	Holliston.
Davidson, Henry Wilbur	Auburn.
Davis, Charles Ellsworth	North Adams.
DeLano, Frederic Lewis	Richmond Hill, N. Y.
DeLorenzo, Joseph, Jr.	Kingston.
Desrosiers, Adolphe Biron	Orange.
Donnelly, Edward Boyce	Waltham.
Foster, William Edward	Ipswich.
Goldthwaite, Ernest	Dunstable.
Hawes, Ralph Edmund	Sudbury.
Hayden, Charles Ernest	Newtonville.
Herron, Frank Robert	Greenfield.
Hess, Frank Wesley	Springfield.
Humphrey, Leo Harris	Medford.
Hyde, Gerald	Buzzards Bay.
Johnson, Gunnar Theodore	Leicester.
Johnson, Tage Frederick	Milton.
Kaakinen, Theodore	Fitchburg.
Ladd, Joseph Mark	Worcester.
Lahey, Jeremiah Joseph	Plymouth.
Leoncini, Louis John	Hopedale.
Maclean, Theodore Elwin	Spencer.
Markert, Ernest Frederick	Amherst.
Massa, Andrew Louis	East Boston.
Mathew, George Williams, Jr.	Boston.
McCurdy, John	Gardiner, Me.
Meeker, Alice Maude	Ludlow.
Mellen, James Dwight	Athol.
Nash, Alexander Allaire	Mattapoisett.
Newhall, Benjamin Weston	Danvers.
Nutter, Richard Louis	Melrose.
Parsons, Philip Hinde	Manchester.
Pearse, William Thomas	Rockland.
Prouty, Homer Spooner	Furnace.
Putnam, Frank Wendell, Jr.	West Newton.
Richards, Foster Herbert	Lowell.
Riley, Ernest Francis	Dedham.
Root, Worth Stewart	Colrain.
Rowell, Elisabeth Johnson	Groton.
Safran, Mayer	Malden.
Sawyer, Roland Willard	Groton.
Shelnut, Charles Francis	South Boston.
Smith, Edith Caswell	Wakefield.
Sullivan, Maurice Laurence	Peabody.
Towne, Milton Curtis	Petersham.
Tribe, Gordon Stanley	Somerville.
Truelson, Stanley Dunham	Somerville.
Varnum, William Parker	Collinsville.
Walker, Roger Francis	South Sudbury.
Wetherbee, Roger Frederick	Townsend Harbor.
Whitcomb, Janet	Haverhill.
Wilson, Herbert Ralph	Chelsea.
Wood, Helen May	Stoughton.
Yocum, Margaret Gardner	Woster, Ohio.

SECOND-YEAR TWO-YEAR STUDENTS, 1926-27.

Aalto, Nestor Armas	Osterville	Box 213, M. A. C.
Anderson, Ralph Welman	Dorchester	Care of Mrs. Webb, Baker Lane.
Andrews, Herman George	Southampton	Care of Mrs. Sheffield, North Amherst.
Atwood, Donald Meredith	North Abington	83 Pleasant Street.
Bennett, Dorothy Dunbar	Watertown	Abigail Adams House.
Bird, James Henry	West Roxbury	12 South College.
Boelsma, Harmen	Hingham	Sunset Avenue, care of Professor Banta.
Bradley, Charles Luther	Lee	Care of Mrs. Webb, Baker Lane.
Bullard, Rachel Althea	Orange	Abigail Adams House.
Burrill, Arthur Webster	Wellesley	A. T. G., North College.
Burt, Percy Leighton	Vineyard Haven	4 Chestnut Street.
Caffrey, William James	Cromwell, Conn.	Kolony Klub.
Callahan, Kathleen Sara	Dorchester	Abigail Adams House.
Cover, Frederick Brooke	Lowell	Box 272, Belchertown.
Elder, Roy Wentworth Rockwell	Waverley	97 Pleasant Street.
Felton, Lindley	Marlborough	A. T. G., North College.
Fitzgerald, Elmer Smith	Leominster	Kolony Klub.
Fullam, Kenneth Bullard	North Brookfield	56 Pleasant Street.
Fuller, Lucia Baldwin	Belmont	Abigail Adams House.
Gale, Merton Stuart	Gardner	56 Pleasant Street.
Gay, Edward Ernest, Jr.	Belchertown	Belchertown.
Gibbs, John Edward	Nantucket	A. T. G., North College.
Graves, Lyman William	Conway	9 Mt. Pleasant.
Hall, George Winston	Dudley	Kolony Klub.
Hallbourg, Robert Francis	Westfield	17 Kellogg Avenue.
Hannigan, Michael Joseph	Milford	Baker Lane.
Hawkes, Louis Peter	Buckland	14 McClellan Street.
Hayward, Francis Dean	Holden	5 Tillson Court.
Holland, Leslie Clayton	Holyoke	Kolony Klub.
Hoxie, Edward Graham	Dalton	138 South Pleasant Street.
Kenyon, Bernard Holden	Winchendon	Tillson Farm Experiment Station.
Ketchen, Andrew Gilmore	Belchertown	Belchertown.
King, Arthur Hamilton	Woburn	Kolony Klub.
Knox, Barbara Howard	Taunton	Abigail Adams House.
Marks, Stanley Emery	East Lynn	Kolony Klub.
Mason, George Arthur	Somerville	Kolony Klub.
Mason, Harold C.	Princeton	Kolony Klub.
May, Arthur Howard	Bernardston	Bernardston.
Nicolai, Mario	Somerville	Care of Mrs. Webb, Baker Lane.
Nielsen, Henning Olav	Amherst	9 College Avenue.
Nilsson, Gustaf Carl	Worcester	Kolony Klub.
O'Neil, Eugene Francis	Amherst	52 Whitney Street.
Parker, Alfred Henry	East Pepperell	Kolony Klub.
Parsons, Harold Kenneth	Brooklyn, N. Y.	24 McClellan Street.
Peabody, Samuel Sumner	Manchester	86 Pleasant Street.
Pickard, Ashley Houghton	Littleton	Kolony Klub.
Pitt, Charles Randall	Bridgeport, Conn.	Kolony Klub.
Plude, Alfred Edward	Somerville	12 Chestnut Street.
Post, Philip Malcolm	Worcester	31 East Pleasant Street.
Pratt, Martha Elizabeth	Hadley	116 Pleasant Street.
Price, Ruth	North Attleborough	Abigail Adams House.
Roy, John Plimpton	North Adams	Kolony Klub.
Russ, Sherman Wilder	Sunderland	Sunderland.
Scott, Raymond Earle	Pepperell	7 McClellan Street.
Sennott, Miriam Katherine	West Roxbury	Abigail Adams House.
Shepard, Lucius Colton	Princeton	35 East Pleasant Street.
Sime, Frederick Oliver	North Weymouth	Kolony Klub.
Smith, Frank Pellman	Somerville	Care of Prof. Sears, Mt. Pleasant.
Smith, Ralph Wesley	Hyde Park	Kolony Klub.
Smith, Roland Whipple	Quincy	A. T. G., North College.
Smyth, James William	Jamaica Plain	8 Kellogg Avenue.
Stewart, Harold Edward	West Boylston	86 Pleasant Street.
Sweet, Howard Arthur	Norton	45 Fearing Street.
Tefft, Volney Vanderneer	Ashby	Aggie Inn.
Vincent, Archer William	Townshend, Vt.	A. T. G., North College.
Vining, Kenneth Rogers	New Bedford	30 Lincoln Avenue.
Waldo, Theodore Elias	Boylston Centre	Care of Mrs. Webb, Baker Lane.
Warren, Lawrence Philip	Westborough	45 Fearing Street.
Watson, Neil Buster	Flint, Mich.	108 Pleasant Street.
Weeks, Janet	Somerville	Abigail Adams House.
Whitcomb, Oliver Adams	Littleton	Kolony Klub.
Whitbed, Morton Ernest	Bernardston	3 Nutting Avenue.
Whitmore, Edwin Ervin	Campello	Kolony Klub.
Wile, Ira Rigby	New York, N. Y.	Baker Lane.
Winslow, Rex Parker	Worcester	17 Kellogg Avenue.
Woodbury, Donald Frederick	Sunderland	Sunderland.
Young, Edwin Ralph	Worcester	86 Pleasant Street.
Zaik, Frank Leo	East Brookfield	A. T. G., North College.

FIRST YEAR TWO-YEAR STUDENTS, 1926-27.

Baker, Daniel Wallace	Brighton	37 Pleasant Street.
Ballard, Alden Chester	North Adams	Eames Avenue.
Batchelor, Warren Arthur	Stoughton	3 McClure Street.
Bergman, Leroy Leonard	Orange	7 East Pleasant Street.
Bridges, Mildred Frances	West Brookfield	Abigail Adams House.
Butcher, Sydney Edward	North Amherst	North Amherst.
Butler, Bradford Henry	Newburyport	84 Pleasant Street.
Butters, Alden William	Natick	70 Lincoln Avenue.
Callahan, Eileen Mary	Dorchester	Abigail Adams House.
Chace, William Stuart	South Dartmouth	55 Amity Street.
Clark, Robert William	Springfield	9 Fearing Street.
Clarke, Raymond Davenport	East Brimfield	22 Sunset Avenue.
Cook, Errol Francis	Waltham	45 Pleasant Street.
Crowell, Arthur Desmond	South Brewster	3 Allen Street.
Davis, Eber Hammond	Rutland, Vt.	1 Cottage Street.
Dennett, Charles Norman, Jr.	Amesbury	81 Pleasant Street.
Dennett, John Bradford	Plympton	46 McClellan Street.
Dodds, Richard Wright	Littleton	8 Allen Street.
Doherty, John Joseph	Woburn	3 Allen Street.
Doran, Robert Edward	Lexington	3 Hallock Street.
Eldredge, Eunice Constance	Chatham	Abigail Adams House.
Elliott, George Ramon	Groveland	66 Pleasant Street.
Emery, Malcolm Small	Foxborough	75 Pleasant Street.
Finerty, Richard Daniel	Newton	9 College Avenue.
Freden, Halmar William	Brockton	Baker Lane, care of Mrs. Webb.
Gadoury, Edgar Anthony	Dudley	6 Kellogg Avenue.
Golliver, Sydney Joseph	New Haven, Conn.	60 Pleasant Street.
Graham, Herbert Walker	Marlborough	44 High Street.
Hancock, Joan	Montreal, Que., Can.	Abigail Adams House.
Hicks, Edward Ernest	Holyoke	133 Pearl Street, Holyoke.
Hoffman, Ludwig	Rockville, Conn.	21 Pleasant Street.
Hovey, Stuart Woodbury	Dracut	35 Lincoln Avenue.
Jackson, Sulo	Osterville	68 Lincoln Avenue.
Jewett, Lloyd Wendell	Middlebury, Vt.	10 Nutting Avenue.
Johnson, Earling Christian	Everett	3 McClellan Street.
Johnson, Herbert Fox	Allston	Care of Mrs. Webb, Baker Lane.
Kane, Harry Busse	Amsterdam, N. Y.	73 Pleasant Street.
Kellogg, Charles Goodrich	Benson, Vt.	68 Lincoln Avenue.
Kimball, George Warren	Westford	8 Allen Street.
Larned, Ruth Edwina	Amherst	No. Pleasant Street.
Lawson, Harry LeRoy	Brockton	14 McClellan Street.
Lawson, Thomas Wing	North Dartmouth	55 Amity Street.
Lopes, Frank Luce	Vineyard Haven	68 Lincoln Avenue.
MacIntyre, John Wesley	Springfield	Care of Mr. Sheffield, Pine Street, North Amherst.
Maddocks, Lewis Henry, Jr.	Dracut	29 Lincoln Avenue.
Marchant, John Chesley	Boston	86 Pleasant Street.
Mayberry, Harold Edmunds	Northborough	46 McClellan Street.
Metcalf, Earl D.	Weld, Me.	Care of Mrs. Webb, Baker Lane.
Mitchell, Samuel Stetson	Salem	84 Pleasant Street.
Napoli, Thomas	Lexington	27 Cottage Street.
Nelson, Sidney Parkhurst	Boston	86 Pleasant Street.
Olsen, Ralph Edwin	Waverley	97 Pleasant Street.
Owens, Albert Joseph	Prospect Plains, N. J.	30 Lincoln Avenue.
Page, Albert Harrington	Framingham	37 Pleasant Street.
Pazsit, Andrew Stephen	Mansfield	76 Main Street.
Petersen, Bradley Huston	Worcester	83 Pleasant Street.
Pollard, James William	North Adams	83 Pleasant Street.
Poskitt, Frank Willard	Westborough	46 McClellan Street.
Puffer, Robert Edward	Saugus	10 Nutting Avenue.
Pulsifer, Howard George	Natick	70 Lincoln Avenue.
Rabouin, Henry Victor	Windsor	21 Pleasant Street.
Randall, Alice Ravenia	Belchertown	Abigail Adams House.
Reed, Milton, 2nd	Taunton	30 Lincoln Avenue.
Reed, Myrton Starkey	Belmont	45 Fearing Street.
Ripley, John Cheney	South Weymouth	30 Fearing Street.
Roche, Gerald Brendon	Charlestown	8 Boston Street.
Rommell, George J.	Dorchester	9 College Avenue.
Saunders, Blanche M.	Brewster, N. Y.	Abigail Adams House.
Shea, Walter Thomas	Springfield	Care of Mr. Sheffield, Pine Street, North Amherst.
Stackpole, Alan Douglas	Arlington	56 Pleasant Street.
Stanley, Richard Harry	Templeton	66 Lincoln Avenue.
Starkweather, Oscar Allan	Needham	7 East Pleasant Street.
Stockwell, Cecil Gordon	Amherst	4 Chestnut Street.
Stowell, Dwight Kenneth	New Salem	21 Woodside Avenue.
Taylor, Oscar Banks	Green's Farms, Conn.	30 Lincoln Avenue.
Walsh, Thomas Burton	Amherst	35 East Pleasant Street.
Warren, Isadora Mildred	Westfield	Abigail Adams House.
Wells, Arthur William, Jr.	Dracut	35 Lincoln Avenue.
Wetmore, Herbert Alston	Worcester	66 Lincoln Avenue.
Wilcox, Charles Field	North Wilmington	44 High Street.
Wilcox, Philip Alan	Windsor, Vt.	Box 5, Stockbridge Hall.

Wiley, Giles Hyman	Essex Junction, Vt.	1 Cottage Street.
Winkler, Eleanor King	Wakefield	Abigail Adams House.
Wood, Francis Deane	Belfast, Me.	75 Pleasant Street.
Woodhead, Paul Anthony	Chelmsford	41 Pleasant Street.
Wyman, Harold Frank	Leominster	41 Pleasant Street.
Yarrows, Frank Joseph	Hatfield	Hatfield.

VOCATIONAL POULTRY COURSE, 1926.

Barker, Samuel Prnyn	Assinippi	45 Fearing Street.
Chase, Rolfe Baker	Taunton	45 Fearing Street.
Dewar, Charles Duncan	Dedham	30 Fearing Street.
Grant, Loyal William	Fall River	Care of Prof. Banta, Sun- set Avenue.
Rogers, John Saltonstall	South Orleans	18 Nutting Avenue.
Trefry, Arthur William	Lynn	18 Nutting Avenue.

WINTER SCHOOL, 1926.

Aldrich, Elbert C.	Granby.
Anderson, Esther E.	South Manchester, Conn.
Andreson, James	Worcester.
Atkins, Lawrence	Charlemont.
Barbey, John	Montmollin, Switzerland.
Barnhart, L. F.	Stoneham.
Bellman, Sturgis	Cotuit.
Bolles, Mrs. C. E.	Amherst.
Boyden, Wm. E. ¹	North Hanover.
Branch, Herbert C.	Lonsdale, R. I.
Bridges, G. Edwin	Newfield, Me.
Byons, Thomas E.	Irrington, N. J.
Campbell, Edward	Clinton.
Cardinal, Gerard E.	Malden.
Craig, Donald W.	Weymouth.
Carroll, Helen L.	Hanover.
Crosby, Leonard E.	Oxford.
Dutton, Edward A., Jr.	East Craftsbury, Vt.
Duwell, Mrs. H. J.	Amherst.
Eaton, Ellis L.	Northampton.
Erickson, James E. V.	Hartsville.
Frost, Clarence A.	Westford.
Gage, Nandell P.	North Craftsbury, Vt.
Gilchrest, Ray W.	Fall River.
Glesmann, Edward	Holyoke.
Gordon, George F.	Ipswich.
Goss, C. Lucius A.	Amherst.
Heinold, Edwin	Clinton.
Hewins, Lawrence	Walpole.
Holbrow, John C.	Dorchester.
Holmes, Henry P.	Brighton.
Howland, William W.	Springfield.
Johnson, James W.	Orange.
Kalberg, Mildred	Marshfield Centre.
Kraemer, Carl A.	Clinton.
Levine, Sophie	Springfield.
Martin, Everett L.	Cheshire.
McLay, John J.	North Andover.
Mellen, Howard	Shrewsbury.
Merritt, Milton E.	Somerville.
Miller, William A., Jr.	Conimicut, R. I.
Mitchell, Robert L.	Salem.
Monk, Stanley E.	Auburn, Me.
O'Neil, Kathleen	Dorchester.
Parker, Reginald S.	Milford.
Pearse, John N.	Rockland.
Phinney, Elizabeth F.	Amherst.
Pierce, Edward S.	Barre, Vt.
Quimper, Anthony A.	Westfield.
Quinn, Woodville P.	New York, N. Y.
Rosenbaum, Abraham	North Westchester, Conn.
Sharp, Mrs. Dallas L., Jr.	Hingham.
Sheffield, Howard	North Amherst.
Sloane, Alvin	Somerville.
Sonstroem, John R.	Bristol, Conn.
Sorenson, Christopher	Greenfield.
Stark, Charles D.	Ashfield.
Stewart, Ernest	North Andover.
Taylor, Charles	Whitman.
Taylor, Mary H.	Amherst.
Towne, Milton C.	Petersham.
Treblas, P. J.	Northampton.
Waite, John A.	Lexington.
Walsh, John A.	Watertown.
Williams, Paul	Northampton.
Williamson, James S.	Dudley.
Worth, Harry V.	New Bedford.
Zimmele, G. B.	Jamaica Plain.

SUMMER SCHOOL, 1926.

Graduate School Students.

Benoit, Helen A.	Amherst.
Buchanan, Walter G.	Methuen.
Coveney, John J.	Amherst.
Cowing, William A.	West Springfield.
Drain, Brooks D.	Amherst.
Flynn, Alan F.	Sagamore.
Fuller, James E.	Colorado Springs, Col.
Garvey, Mary E.	Amherst.
Goodwin, Hope C.	North Amherst.
Goodwin, William I.	North Amherst.
Halloran, Elizabeth	Northampton.
Hamilton, William B.	St. Lambert, Que., Can.
Hemenway, Justin S.	Williamsburg.
Jack, Melvin C.	Amherst.
Kelly, Leslie M.	Amherst.
Kelly, Oliver W.	Amherst.
Linehan, Mary D.	Amherst.
Mayo, William I.	Northampton.
McDonnell, Anna H.	Florence.
O'Brien, Mary C.	Greenfield.
O'Donnell, Mary E.	Northampton.
Pulley, Marion G.	Amherst.
Rand, Lena A.	Wethersfield, Conn.
Ross, Charles F.	Lee.
Rotunno, Noreda A.	Syracuse, N. Y.
Salman, Kenneth A.	Needham.
Strong, Ruth A.	Amherst.
Tower, Alfred L.	North Amherst.
Turner, Charles E.	Springfield.

ENROLLMENT—NOT GRADUATE SCHOOL.

Allen, Elizabeth M.	Amherst.
Allen, Francis S.	Belchertown.
Allen, Thomas S.	Belchertown.
Anderson, Isabel	Dorchester.
Barlow, Harry E.	Amherst.
Barlow, Mrs. Helen	Amherst.
Barlow, Helen A.	Amherst.
Belyea, Beatrice M.	Bridgewater.
Bingham, Harold C.	Nashua, N. H.
Bowen, Ruth	Keene, N. H.
Brooks, Mrs. Charles	Mangum, N. C.
Brooks, Marguerite T.	Boston.
Brown, Mildred S.	North Amherst.
Brown, Richard B.	Northampton.
Buckley, Arthur V.	Natick.
Bunker, Amy H.	Northampton.
Carlson, Oscar E.	Boston.
Chapman, Gean M.	Bradford.
Chapman, Lena	Amherst.
Chenoweth, Winifred L.	North Amherst.
Church, Cornelia B.	North Amherst.
Clifford, Mary A.	Springfield.
Coldwell, Archibald G.	Lynn.
Conlan, Bertha A.	Cambridge.
Connelly, Helen M.	Dorchester.
Connelly, Margaret M.	Dorchester.
Cook, Grace W.	Peabody.
Cook, Martha A.	North Amherst.
Copson, Harry R.	Easthampton.
Corcoran, Mary E.	Holyoke.
Crittenden, Viola E.	Beverly.
Cummings, Maurice A.	Cambridge.
Cummings, Mrs. Edna D.	Holyoke.
Cunningham, Alice	Winthrop.
Cutler, Samuel	Springfield.
Dacey, Margaret	Conway.
Donahue, Margaret L.	Roslindale.
Doyle, Margaret L.	Natick.
Duhowski, Anna	Deerfield.
Dwyer, Edward M.	Sunderland.
Dwyer, Eleanor	Sunderland.
Emerson, Elizabeth J.	Amherst.
Everson, Bettina L.	Amherst.
Fenton, Mary B.	Northampton.
Foley, Dora C.	Enfield.
Foord, Elizabeth L.	Amherst.
Graham, Elizabeth	Amherst.
Grant, John F.	South Hadley.
Greenaway, J. Emerson	Springfield.
Gridley, Charles L.	Chicopee.
Grimes, Anna C.	East Boston.
Harriman, David E.	Longmeadow.
Harrison, Arthur K.	Amherst.

Hawley, Mrs. Edna B.	Amherst.
Hickey, Rose M.	North Cambridge.
Hinds, Elizabeth	Winchester.
Hintze, Harold S., Jr.	Amherst.
Holleran, Frances M.	Rosindale.
Hynes, Ralph W.	Holyoke.
Irwin, Mrs. Elizabeth C.	Amherst.
Jones, Mildred	Houlton, Me.
Joy, John L.	Amherst.
Kelley, Margaret L.	Amherst.
Kidger, Mrs. Marion P.	Newtonville.
King, Kathleen G.	South Amherst.
Kingsbury, Eleanor G.	Holyoke.
Lacey, Austin L.	Northampton.
Lassiter, Elizabeth R.	Holyoke.
Lenigan, Margaret L.	Holyoke.
Lyman, Jennie I.	Amherst.
Lyman, Laura E.	Amherst.
MacNally, Alice	Roxbury.
Marshall, Maud A.	Amherst.
Martin, Margaret A.	Amherst.
McMorrow, Frances B.	Boston.
Medve, Elizabeth	Lawrence.
Meyer, Beatrice F.	Amherst.
Miller, Margaret E.	Hadley.
Mitten, Elizabeth M.	Amherst.
Moriarty, Margaret M.	West Roxbury.
Morse, Alice L.	Roxbury.
Morse, Ellen H.	Amherst.
Morton, Sylvia S.	Conway.
Murdough, Edwin L.	Springfield.
Murray, Anna E.	Dorchester.
Newcomb, Bertha A.	Deerfield.
Newcomb, Roxie A.	Deerfield.
Newport, Florence E.	Amherst.
Noble, Frank F.	Fall River.
Nolan, Helena M.	Dorchester.
Nolan, Mrs. Katherine M.	Dorchester.
Nolan, Mary F.	Dorchester.
O'Connor, Deborah	Worcester.
O'Connor, Margaret A.	Northampton.
O'Connor, Mary	Northampton.
O'Leary, John T., Jr.	Northampton.
Percy, Myrtle L.	Ashfield.
Pickering, Dorothy N.	Amherst.
Power, Anne W.	Dorchester.
Pray, Mrs. F. C.	Amherst.
Preble, Laura E.	Dorchester.
Pushee, George F.	North Amherst.
Reed, Mrs. Edna W.	North Amherst.
Regan, Alice C.	Rosindale.
Reidy, Bland M.	Worcester.
Richards, Robert S.	Melrose.
Ricker, Albion B.	Turner, Me.
Roberts, William	Amherst.
Ross, Hazel A.	Northampton.
Roulston, Alice G.	Mattapan.
Rudquist, Birger J.	Boston.
Rundquist, Edna J.	Gloucester.
Ruth, Dorothea C.	Dorchester.
Sawyer, Louise W.	Fitchburg.
Searle, Jean	Amherst.
Shaw, Doris E.	Amherst.
Shea, Eleanor B.	Springfield.
Shea, Margaret M.	Springfield.
Shumway, Sara S.	Monson.
Slack, Grace G.	Allston.
Solov, Mrs. Agnes H.	Winchester.
Stalker, Louise M.	Dorchester.
Stanisiewski, Peter F.	Amherst.
Strong, Dwight	Amherst.
Sullivan, Mary G.	Rosindale.
Taylor, Mrs. Carolyn G.	Springfield.
Thayer, Eileen	Amherst.
Thompson, Rufus H.	Amherst.
Thornton, Mary	Amherst.
Villalobos, Catalina	New York, N. Y.
Walsh, Mrs. Elizabeth	Amherst.
Ward, Eleanor	Amherst.
Whitney, Barbara	Springfield.
Whittle, Doris E.	Worcester.
Wilson, Julia M.	Amherst.
Wood, Basil B.	Amherst.
Wright, Frederick	Amherst.
Wright, Mrs. Rosalie R.	Amherst.

STUDENTS REGISTERED AFTER THE CATALOGUE FOR 1925-26 WAS PUBLISHED.

Two-Year Course.

Carl, Sidney G. Hatfield.

Vocational Poultry Course.

Esther, John Chester Northborough.

SUMMARY OF SHORT COURSE ENROLLMENT.

	Men.	Women.	Total.
Two-year Course, second year	69	9	78
Two-year Course, first year	78	9	87
Vocational Poultry Course	6	-	6
Winter School, 1926	58	10	68
Summer School, 1926	51	116	167
Totals	262	144	406

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THE SIXTY-FOURTH ANNUAL REPORT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE

ISSUED IN ACCORDANCE WITH SECTION 8, CHAPTER 75, OF THE GENERAL LAWS

PART I.—THE REPORT OF THE PRESIDENT AND OTHER OFFICERS OF ADMINISTRATION FOR THE FISCAL YEAR ENDED NOV. 30, 1926



DEPARTMENT OF EDUCATION
THE COMMONWEALTH OF MASSACHUSETTS

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MASSACHUSETTS AGRICULTURAL COLLEGE

REPORT OF THE PRESIDENT TO THE BOARD OF TRUSTEES, 1926

I am sure that you will allow me to begin my first annual report to you as President of the Massachusetts Agricultural College with a sincere word of appreciation for the confidence you have revealed in me by election to this important office. May I earnestly trust that in some measure your faith may be justified? I hope I have wisdom enough to know that I cannot fulfill every expectation. There will be mistakes. My one hope is that I may be able to keep the error column down to a reasonable figure and the other record of good playing at so high a level as will rank me at least as a fairly satisfactory player. Whether that be possible or not, I assure you that I plan to give my best always to the institution over which you have done me the great honor to ask me to preside.

Centralized Control

A year ago at this time, I was obliged to call your attention to the centralized control established by the Legislature as it was working in relation to the administration of the college. This year I am glad to report a change in conditions that has relieved and eased the situation greatly. It has progressed sufficiently to warrant the confidence that we shall in time reach reasonable and workable agreements upon every essential matter. I am happy to make this statement; and I should like to record my personal appreciation of the part that the Commission, especially the Chairman, has taken in furthering the reasonable rulings that now obtain on several matters that had heretofore bothered us. The situation is all the more gratifying inasmuch as efforts at legislation often result in feelings that sometimes linger long. So far as I am aware, there is no evidence anywhere of any feeling whatever between those who supported and those who opposed the legislative bill of last year.

Morale of the Faculty

The morale of the college staff at the present time is, I think, fairly normal. It has improved measurably during this past year. Nothing

affects the spirit of a group like a condition of uncertainty. For six years, we had worked more or less in that kind of atmosphere. It was often a wonder to me how the faculty could maintain its *esprit de corps* at so high a level. At least, we have reached the point where we can hope for a return to the high standards which must dominate a professional group like ours if it is to render the effective service expected of it by those in authority and by the people it serves.

A Period of Readjustment

A good faculty morale is quite necessary, too, if we are to meet effectively the problems and readjustments that are immediately calling for settlement. They are many and some of them involve delicate and difficult questions of internal organization effecting every member of the staff. For ten years, we have been practically at a standstill so far as developing a constructive program is concerned. It has been distinctly a transition period in the history of every agricultural college. 1917 saw the apex of a long boom period in agriculture and the high water mark of student registration in the agricultural colleges. That year we had an enrollment of 680 students, all candidates for the degree. Then came the war; the agricultural depression; a reduced registration in agricultural courses here and everywhere; and appropriations based on a policy of strict economy. Besides these factors, there were also for us the new adjustments to centralized control in Boston. It was natural to wait for the tide to turn and to postpone the consideration of a constructive program until more definite and satisfactory conditions prevailed. The significance of this transition may be suggested by the fact that of the 700 (approximately) students on the campus today, 115 are girls, 425 are boys in the college course, and 160 students in the two-year short course; as against 680 boys in 1917 in a uniform collegiate course. This one fact alone shows the type of problem that presents itself to the officers and faculty for early and constructive solution.

Fundamental Problems

Our obvious duty is to move as rapidly as possible upon the one or two important fundamental problems. As I see it, the imperative one is the revision of the four-year course of study. The course as it now stands has been in operation, with some modifications, since 1910. Ever since the war, President Butterfield had often expressed the desire to work out a revision but for one good reason or another he did not accomplish it. As Acting President, I did not deem it wise to consider it in view of the appointment of a permanent executive. At last, we have taken it up. The course of study committee of the faculty has been meeting regularly for some time past. I hope to have it continue its work until a course of study results, better fitted to our needs and conditions than the present one. If this problem can be worked out in a fairly satisfactory manner, and I have faith that it can, many other problems will be solved at the same time.

Anyone who has been connected with a curriculum problem of this kind, knows that it is an extremely difficult task at any time anywhere. In an institution so complex as ours, the difficulty is aggravated by the many different points of view held, the many departments intimately involved, a schedule which always has to consider a great many laboratory arrangements, and by the large number of different objectives that the students desire to have us meet. While the need for a modification is most pressing, nevertheless, I feel that we should move slowly and deliberately enough to work out a curriculum as satisfactory as possible to all the factors involved. The main consideration, however, should be the welfare of the student. Everything must bend

to the aim of giving him the best training possible. I am quite hopeful of the outcome and believe that it can be worked out sooner than some of us anticipate. It should go into effect, in part at least, by the opening of the next college year.

The difficulty of this problem may the better be appreciated by calling attention to some of its implications. In 1923 an Alumni committee made an exhaustive study and filed a report on the curriculum. Later a committee of farmers' organizations did the same thing. The findings of these groups will have to be considered. Then there is the fact that one-fifth of the students are girls. We have been asked by the New England Council to train market experts as soon as possible. Such questions as the following will have to be answered: We have seventeen major groups at the present time; if we combine them how shall we do it? Which shall be combined: Shall the freshman year be required as now or shall it have options? If options, how many? Shall elections begin in the sophomore year as now or shall they be deferred until the junior year? Many of these questions are such as to allow a difference of opinion and therefore likely to provoke much discussion.

Professional Improvement

There are other important problems that intimately touch the faculty which will have to be solved with their co-operation. One of these is: What plan of professional improvement can be devised to meet most effectively our needs and situation. This will apply not only to the resident teaching staff but to the extension and especially to the experiment station group as well. If we are to meet the competition of other colleges, we must soon establish some reasonable plan along this line. Just now a sabbatical year, even for the teaching group, seems remote. We have tried to meet the demand of individuals by an occasional travel privilege on a 50-50 basis, also by allowing certain individuals to take courses in the college along the line of their work and interest. Another question is: Shall there be a distinction in salary made between the eleven months and the ten or nine months member of the staff? If so, what shall it be and on what grounds shall it be made? Some of our sister colleges have started to differentiate between certain types of service, and partly on the basis of the difference in the amount of time of service between the members of the three groups that make up the agricultural college organization.

Before dismissing faculty and curriculum matters, your attention should be called to another important item connected with both: namely, that the major elections of students in our agricultural colleges reveal a rapid and constantly shifting change of emphasis. Sometimes a major will be elected heavily for a number of years; then, without warning, a shift takes place and another major becomes prominent. This sudden change is most disturbing to the individual departmental administration which usually is organized carefully to meet the needs of a definite number of students. Whether any curriculum arrangement can be devised that will meet such fluctuations is doubtful. The main motive affecting the choice of the student is, I am sure, the immediate economic advantage that the major promises. The major that opens the door immediately to a good job, as the boy would put it, has "the call." The same motive also accounts for the smaller registrations prevailing in the agricultural colleges at the present time. It will continue to operate thus until the prospective student or freshman sees clearly that there is as good a wage or income opportunity in agriculture as there is in some other vocation that he may enter. Common comment of executives in Washington last November was "when agriculture looks up as it did in 1916, the students will come back in equally large numbers."

To illustrate this point the following figures will probably serve.

The first four major choices of the classes of 1922-1925 inclusive in the order of preference were as follows:

1922	An.Hus.	17	Ag.Ec.	15	Chem.	13	Pom.	11
1923	Pom.	20	Ag.Ec.	17	An.Hus.	12	Land.Gard.	11
1924	Ag.Ec.	16	Pom.	15	An.Hus.	9	Land.Gard.	9
1925	Ag.Ed.	17	Ent.	13	Land.Gard.	12	An.Hus.	11

Here are four different firsts in four successive years. Animal Husbandry goes from first to fourth place, and Agricultural Economics after holding a relatively high place for three years, goes out altogether in the fourth year. The whole shift is explained by saying that the students thought the dairy game offered the best chance in 1922, the apple game in 1923, marketing in 1924, and teaching in 1925.

Facilities for Women Students

Another urgent problem is that connected with the housing of women. Last year the girls' dormitory was filled and the social facilities of the college were taxed to the limit. In view of the many applications coming in we were faced last spring with the question, "what shall we do with all these girls if they present themselves in September?" It was evident that we should need additional room. A careful survey of the town revealed that very little relief could be obtained there. The possibility of renting a large house or two was entertained for a while but was abandoned in view of the cost of heating, service (janitor and matron), and the high rental. Finally, we decided to limit the numbers on some fair and sensible basis, and to utilize only the accommodations available on the campus. The rooms occupied by the office clerks in the dining-hall were taken over. These would take care of about fifteen. It meant that the clerks, many of whom had occupied these quarters for years, would have to seek accommodations off campus. It also meant the additional cost of employing a matron. The plan was carried out to the point of notifying the clerks that they must vacate, and of asking Miss Diether, manager of the dining-hall, to act as matron along with her other duties. In August, we were informed by the Dean that many of the applicants were withdrawing. It became evident that we would not need the dining-hall quarters after all. Most of the clerks came back. It is needless to say that the experience for them was not a happy one. The cause for the large number of withdrawals is partly explained by the fact that some of the applicants had clearly planned to enter other colleges; ours was a second or third choice.

The girls' dormitory was planned with the single purpose of housing as many girls as possible. On this account, no dining-room was included in the plans, and the reception or living-room was reduced to what we now know to be inadequate dimensions. In order to meet this situation more effectively another year, Miss Skinner advised that some of the rooms on the lower floor of Abigail Adams Hall be taken over. By re-arrangement they could be made to meet our present needs fairly well. We should like to have been able to do this, but, on account of the cost and the urgent need for living rooms, we could not see our way. It is quite clear that we shall have to provide more room for social purposes in the very near future.

I have said enough to indicate the significance and implications of the adoption of a policy that will increase the number of girls at the college. It will probably cost some money, and it is sure to result in problems that hitherto we have not had to face. Much, therefore, depends upon the policy to be established by the Board of Trustees. The whole question is involved necessarily in the larger question of the scope of the college now under consideration by the sub-committee. There is no doubt that the offerings of the college now present most attractive educational and vocational opportunities for women.

The problem of properly housing the women students suggests the old question of properly housing the men. A dormitory of good proportions would be a great boon. It would relieve a congestion that has been with us for a long time. Besides, our type of boy would profit greatly by the social contacts which the life of a dormitory affords. If a new dormitory were maintained as a freshman dormitory, every student in college would have the experience of a year of close contact with members of his class. The result would be, I believe, most beneficial and far-reaching, not only upon the life of the individual student but upon the family feeling of the whole student group. I believe the Trustees are right in constantly stressing this building project as one of prime necessity.

Building and Equipment Needs

Our building equipment on the whole is excellent. The great area of the campus with its many buildings, always looks adequate and complete to the visitor. We who "carry on" with the students, year in and year out, however, are conscious of a number of serious deficiencies still if the students are to receive the best service that a good college equipment should afford. In order to "round out" our building equipment, we need two or three major buildings and several important minor items. What these should be, I have tried to show in the list below. It was prepared tentatively in quick response to the request of the Commission on Administration and Finance last summer to have us indicate our desires regarding a five-year building program. It was approved in September by the full Board as it stands below:

1. Men's Dormitory (\$150,000) or Women's Dormitory	\$250,000
2. Gymnasium	350,000
3. Administration & Recitation Building	100,000
4. Physics Bldg. (Completion of Microbiology Lab.)	150,000
5. Enlargement of Clark Hall	65,000
6. Horticultural Manufactures Bldg. & Equip.	60,000
7. Roads and Walks	30,000
8. Enlarging College Reservoir	25,000
9. Practice house—Home Economics	21,000
10. Women's Gymnasium and Equipment	16,450
11. Better Fire Protection	50,000
12. House for the Chief Engineer	7,500
13. New Steam Line, East Exp. Stat. to Micro. Bldg.	4,775
14. Repairs on the Old Durfee Greenhouse	7,000
15. Making over Fourth Floor of North College	4,000
16. Culvert for Brook in Ravine	2,600
17. Additional Land, Cranberry Sta., East Wareham	1,000
18. Repairs on the Harlow House	1,000
19. Library Building—important but tentative	100,000

\$1,245,325

How many of these items will be included in the recommendations of the Commission on Administration and Finance (for a five-year state building program) no one knows. What we do know is that the state faces tremendous demands for building construction at this time. With other departments we are caught in a rather helpless situation and, therefore, may find it exceedingly difficult to get the building appropriations which we so much need. There are many items in the above list that we ought to have immediately if we are going to do the most effective work and to render the best educational service to the students.

Private Gifts

If the demands of the state situation result in further postponement

for us on some of our projects, I see no other way out than to seek for funds from private sources. There is no good reason why this should not be done in any case. Ours is one of the very few state educational institutions that has yet to receive the gift of a building from a private donor. Some of our sister colleges and universities have as many buildings erected by private as they have by public benefactions. I cannot believe that an institution that has rendered such conspicuous scientific and educational service in the agricultural field cannot appeal with persuasiveness and power to the friends of agriculture, as well as to men of wealth favorably disposed to promote worthy projects. Has not the time come for us to consider seriously a campaign in behalf of this institution that will bring her claims to the attention of public spirited and philanthropic men? I am inclined to think that it has, and I hope that the Trustees will agree with me sufficiently to take up at an early date the question of promoting effective machinery for such an appeal.

Let me record here what I have often emphasized,—namely, that the raising of the funds for the Memorial Building and the carrying through of that splendid project was a great accomplishment, especially in view of the number and resources of our small body of alumni. It gives us cause for real pride whenever we think of it. I am sure that we can expect from the Alumni a similar response to other needs as they arise, but they alone are not capable of doing the things that we need to have done. We must appeal to other friends as well. Can we not make a concerted effort to reach those who do not know the record of this institution, or appreciate the great possibilities for effective public service that resides on the campus?

It is a great pleasure here to report recent gifts that point to an increasing appreciation of our need for supplementary funds. They lend hope to the success of an appeal such as I have mentioned. I refer to the gift just received of \$23,000 by the will of the late Porter L. Newton of Waltham; the gift of \$5,000 from our late colleague and friend, Hon. Charles A. Gleason of North Brookfield; and a gift last month of \$5,000 from the late Rear-Admiral George H. Barber, an alumnus of the college. There is also the possibility of a fund from the Lotta Crabtree Estate. These recent additions increase our trust funds of last year from a total of \$85,000 to close to \$120,000. These, in the main, are gifts to provide loans and scholarships to worthy students. We can use a great deal more for the same purpose. I hope to see the total doubled within the next year or two. There is no doubt that we have a great many other friends who will be glad to help the worthy boy and girl that we are trying to serve if they are only fully acquainted with our needs and demands.

Memorial Hall

The usefulness of Memorial Hall as a student center has grown steadily. It supplies excellent facilities for the growing student academic activities, the lounge is increasingly used for study and reading by students who room a considerable distance from the campus, almost the whole social life of the campus now centers in this beautiful building. The alumni gave the State much more than \$150,000 when they made that gift; they gave to the boys and girls of Massachusetts for generations, a place of meeting which is bound to result in wholesome associations and friendships as well as inspiring memories.

Resignations

A number of particularly significant resignations have occurred during the year. The resignation of Mr. Ralph J. Watts as Secretary of the College, after a long and effective service of eighteen years, represented a distinct loss to the institution. Mr. Watts knew the alumni

as a whole better than any other person on the campus. During the time he was with us, he had made many contacts and had accumulated a store of information that was invaluable to the executive. His retentive mind could reach back for almost anything that had happened during his term of office. He was always more than a secretary. He knew the business of the college second only to the Treasurer, and the call to an important business managership was the logical result of his great interest and ability. He gave a whole-hearted and devoted service to M. A. C. that will be long remembered.

Mr. Robert D. Hawley, M.A.C. 1918, Extension Editor, was appointed to fill Mr. Watt's place.

Equally significant was the resignation of Mr. John D. Willard, director of the Extension Service, after six years of most able and efficient service in this important administrative office. Director Willard's leadership has been fruitful of sound development in all phases of the work. His insistence that extension teachers should guide agricultural development along sound economic lines has had a wholesome and far reaching influence. He made distinct progress in co-ordinating the various agencies of agricultural extension service and guided the development of a home economics service for Massachusetts women so that it is outstanding in the nation.

Mr. Willard A. Munson, M.A.C. 1905, formerly Director of the Bureau of Markets of the Massachusetts Department of Agriculture, was appointed to succeed Mr. Willard.

The positions formerly filled by Professor Henry F. Judkins, Head of the Department of Dairying, and by Professor Schuyler M. Salisbury, Head of the Department of Animal Husbandry were combined last spring and Professor J. H. Frandsen was appointed to the larger position. He comes well qualified. He has been Head of the Dairy Departments of the University of Idaho and of the University of Nebraska, has served as an editor of the Capper Farm Press, and is editor of the Journal of Dairy Science which is the official organ of the American Dairy Science Association.

In Memoriam

It is my sad duty to report the death of two members of the staff and our former beloved colleague and friend, Professor Charles E. Wellington. On September 28, the whole community was shocked and grieved by the accidental death of Miss Bertha Knight, Extension Specialist in Home Economics, who was killed in an automobile accident at West Barnstable, Mass., while on active duty for the college. Miss Knight was liked by all who knew her, capable in her work, and her loss is keenly felt, not only at the college but throughout the state where her good work had already made for her many friends.

On August 19, Miss Helena T. Goessmann died after an extended illness. She was the daughter of Professor Charles A. Goessmann, the distinguished and beloved chemist whose name is so closely identified with the scientific reputation of the college. She had served the college effectively as instructor in English for fifteen years. Miss Goessmann was a stimulating and interesting teacher and had a host of friends among the members of many classes.

PROFESSOR CHARLES WELLINGTON, PH.D.

Professor Charles Wellington, whose death occurred on November 15th, after a long period of illness, served the college for thirty-eight years (1885-1923), first as associate professor of chemistry, later as head of the department and professor of chemistry. He was not only a thorough student in his chosen profession but an excellent linguist and a wide and thoughtful reader in history, philosophy and belles-lettres. Completely devoted to his Alma Mater, he worked incessantly

for its upbuilding. Not only did he give unsparingly of his time but also gave generously of his own slender stipend. He was always interested in student activities and endeavored always to awaken in students the highest ideals of life. Modest and unassuming in his daily life, Professor Wellington was possessed of a refined, Christian character and his life motto was service. Those who knew him best loved him most and in his passing the college has lost an ardent supporter while his friends and associates are conscious of a loss in many ways irreparable.

Classification of Personnel

The Legislature at its last session ordered that a study be made of the classification of personnel in the employ of the Commonwealth, and that report be made at the next session. Accordingly, a private agency was employed and the study conducted during the summer of 1926. All employees of the college were, of course, included in this study and the recommendations of this agency will involve every one. The basis of the study was a questionnaire answered by each employee. Department Heads were given hearings and opportunity to make recommendations. By your authority, as you will remember, I recommended to the classification survey staff the following salary limits for our professional staff:

Instructors \$2100 from \$1900 (approximately)
 Asst. Professors \$3300 from \$2900 (approximately)
 Professors \$4200 from \$3900 (approximately)
 Heads of Administrative departments \$4500 to \$5000 from \$4200 to \$4500 (approximately)

My suggestions were given sympathetic consideration at the hearing but we shall not know what the outcome will be until the legislature acts.

Report of Student Committee on Curriculum

In an effort to discover the point of view of the students and to get from them suggestions for our curriculum, I appointed, last spring, a committee of seven representative seniors and asked them to give careful consideration to the subject with a view to report to me their findings. This committee did a very commendable piece of work indeed in the short time allotted to it. In the report I find the following interesting suggestion:

"Our other primary suggestion is the transmission of an almost universal appeal for more English in the curriculum, not only as elective courses, but as required courses. English Composition and Public Speaking were strongly desired and recommended to us as absolutely essential. As seniors, the men encountered felt almost universally that they would have appreciated being required to take more English than they did.

"It is hardly necessary to argue the case for English before an educated group of readers. The above expression is simply an indication that it is now felt that the standard of English obtained by college graduates is not high enough. Just how much more English should be required and the kind of English to be insisted upon was a matter of considerable discussion. However, from the wealth of discussion, we feel that we are expressing the sentiment of the students, especially the seniors who now realize their mistake in not taking more of it, when we recommend that four courses of English be required during the junior and senior years, to be taken at the individual's will with the stipulation that at least one of them be a straight course in composition."

I have asked another group of seniors this fall to continue the study

begun by this committee. The combined report will, if thought desirable, be published later.

Legislation

A significant piece of legislation was passed during this year when the State Legislature passed an Act to define the authority of the Trustees of the Massachusetts Agricultural College in administering the affairs of the institution. The following is the act as passed:

"Be it enacted by the Senate and House of Representatives in General Court assembled and by the authority of the same, as follows:—

Section four of chapter fifteen of the General Laws is hereby amended by adding at the end thereof the following new sentence;—Nothing in this chapter shall be construed as affecting the powers and duties of the trustees of the Massachusetts Agricultural College as set forth in chapter seventy-five,—so as to read as follows:—**Section 4.** The Commissioner shall be the executive and administrative head of the department. He shall have charge of the administration and enforcement of all laws, rules and regulations which it is the duty of the department to administer and enforce, and shall be chairman of the board. He shall organize in the department a division of public libraries, a division of immigration and Americanization, a division of the blind and such other divisions as he may determine. Each division shall be in charge of a director and shall be under the general supervision of the commissioner. Nothing in this chapter shall be construed as affecting the powers and duties of the trustees of the Massachusetts Agricultural College as set forth in chapter 75."

This Act simply affirms the power of the Trustees and defines their relationship to the Head of the Department of Education. The Commission on Administration and Finance, still has authority over purchases, salaries, and budget matters.

New Construction

The new construction for the year 1926 amounted to approximately \$30,200.00.

This included the replacement of the Cranberry Station building at Wareham, destroyed by fire May 30, 1926, at a cost of \$9,000.00. The new building is of concrete blocks and provides for an auditorium, a laboratory, and office rooms. A three car garage was also built from this appropriation.

A foreman's cottage was built at the Tillson Farm which provides five rooms and a bath for the foreman of the Experimental Poultry Farm with two offices and a laboratory room for the scientific work.

The Physics building was repaired at a cost of \$4,000.00. This provided for a cement floor in the basement, steel ceilings, new cases for the apparatus and re-wiring with new lighting fixtures and painting throughout.

New calf and quarantine barns were built next to the young stock barn to provide for the development of a herd free from contagious abortion. The calf barn takes care of 45 head, the calves being held in isolation here until they react negatively to the blood test. The quarantine barn contains 6 stalls. These two buildings are models of their kind. The cost was \$11,200.00.

HIGH SCHOOL DAY

The 17th Annual High School Day was held at the College Saturday, May 1st. This event, which has been held regularly on the first Saturday in May, was first started in 1908. It has been attracting an increasing number of high school boys and girls from a greater number of schools each year. This year there was a record attendance of

474 boys; 185 girls; 73 teachers, principals, town representatives and others; and probably 100 more visitors who failed to register. These visitors represented 108 different schools throughout the State.

It has always been the purpose of High School Day to provide an opportunity for those interested to inspect the College in its entirety, to meet the undergraduates and learn of their activities, to interview the faculty relative to the work of the college, and to gain an insight into the exceptional vocational advantages offered in the field of agriculture and allied sciences. A large number of the boys and girls come as guests of friends already in college, while alumni, teachers and town representatives organize groups which come by various means from all parts of the State.

The program for the day has been improved from time to time until one which we believe to be of interest to the greatest number has been developed. This year a live stock parade was added to the program and because of the significance of the live stock judging contest it was called the Massachusetts Interscholastic Live Stock Judging Contest. The three leading contestants from vocational schools were selected to represent Massachusetts in the Vocational Judging Contest at the National Dairy Show held at Detroit in October. One of these boys, Eric Moberg of Smith's School, Northampton, Mass., won a \$400.00 scholarship to use at the college of his choice.

The poultry and fruit judging contests are proving equally as popular and interesting. The detailed program and analysis of attendance for 1926 follows:

Program for the day

- 8:00 A.M.—Registration booths open.
- 8:15 A.M.—Poultry Judging Contest.
- 9:30 A.M.—Exhibition by the Cavalry Unit.
- 11:00 A.M.—Inspection of the campus and college buildings.
- 11:30 A.M.—1:30 P.M.—Explanation of entrance requirements.
Live Stock Parade.
- 12:00 M. —Luncheon—Draper Hall cafeteria open from 12:00 to 1:30.
- 12:30 P.M.—Luncheon meeting of teachers, principals, school superintendents, and Town Representatives.
- 1:00 P.M.—Inspection of the Campus.
- 3:00 P.M.—Varsity baseball game—M.A.C. vs. Wesleyan.
- 5:30 P.M.—Supper—Draper Hall cafeteria open from 5:30 to 7:00.
- 7:00 P.M.—Address by Acting President Lewis.
Award of prizes for interscholastic championship live stock, poultry, and fruit judging contests.
Musical Clubs concert and Roister Doister play.
- 9:30 P.M.—Fraternity receptions.

Registration

	1926	(1925)
Boys	460	(411)
Girls	185	(153)
Teachers and others.....	73	(72)
Total	718	(636)
	1926	(1925)
Number of schools represented.....	105	(90)

Judging Contests

	No. of Teams		No. of Individuals	
	1926	(1925)	1926	(1925)
Fruit Judging.....	13	(4)	44	(18)
Poultry Judging.....	18*	(13)	58	(49)
Live Stock Judging.....	26**	(21)	78	(67)
	57	(38)	180	(134)

* 4 individuals entered in addition to 18 teams.

** 15 senior teams.

11 junior teams.

Infirmary

During the year beginning September 1, 1925 and ending September 1, 1926 one hundred and thirty-two house patients were treated at the infirmary for various lengths of time amounting in all to five hundred and ninety-six hospital days. In addition to this number, two hundred and fifty-seven out-patients made four hundred and fifty-nine visits to the infirmary for treatment and advice.

The outstanding diseases of the year were:

Appendicitis	6
Bronchitis	2
Coryza	4
Diphtheria	2
Heart Disease	1
Infections	8
Influenza	47
Measles	1
Nephritis, acute	1
Neuralgia	1
Pleurisy	1
Pneumonia	5
Sciatica	1
Sprains	8
Tonsillitis and throat troubles	17
Miscellaneous	10
Surgical, minor	16

Diphtheria broke out in one of the dormitories but was quickly stamped out by preventive treatment. An outbreak of influenza occurred involving a large number of students. The disease was not severe and it ran its course in a very few days. On the whole the health of the college students has been excellent. This satisfactory condition is in large part due to the splendid co-operation of the student body, to the watchfulness and care of Professor Hicks and of Miss Christopher, the resident nurse, and to the attention of Mrs. Macrae, the matron of the infirmary.

In closing this first report, let me say that you have handed over to my direction an institution which has served the Commonwealth faithfully and effectively for sixty years. It represents the labor and sacrifices of many eminent educators and devoted faculties. It can be said to have educated not only skilled workers and good citizens, but some of the most influential leaders in agriculture in state and nation. Its Alumni cherish it with a devotion which I know from experience, is deep and abiding. In the presence of its record and achievement, I feel both grateful and humble.

It is a great public service institution. Its Extension Department today reaches to all the corners of the state. Its Experiment Station staff is working quietly on scientific problems that will vitally affect not only the farmer and the farmer's business, but every business in

the state. Its resident teaching staff is not only giving freely to agriculture and industry the benefits of the soundest theory and practice that it knows, but it is also striving to give its students the best education possible both for life and for living.

My hope is that I may so direct its affairs that it will not lose a jot of its present strength and power. I want it to continue to be a dynamic public service institution. I want it to increase in influence and prestige not only because of what it does but because of what it is. I want it never to fail to serve the great cause of agriculture to the limit. I want it useful and efficient in every service it renders. I want the Extension Department to reach people more and more, the Experiment Station to ascertain some of the facts upon which New England prosperity should build, if it is to develop and thrive as it ought; and I want the college to give the boys and girls of the Commonwealth a larger and broader outlook on life as well as skill and ability in their chosen professions. I want it to continue to be a college of excellent rank, working at full speed up to its full capacity all the time, and I shall always strive to keep it so. All this I want; not only because the state pays for it in cold hard cash, though that is reason enough; but because the state needs it and needs it greatly both today and tomorrow.

EDWARD MORGAN LEWIS,
President.

LEGISLATIVE BUDGET 1927

Projects for Permanent Improvements

1. DORMITORY, \$150,000.

For many years the Trustees have had before them the problem of providing adequate housing facilities for the resident students of the College. The demand for a dormitory has become increasingly pressing each year. The capacity of private houses available for student rooms is about taxed to the limit and prices charged students are somewhat high as a result. For several years the request for a dormitory was included in the budget. In recent years other projects have sometimes appeared more immediately urgent and the item for a dormitory has therefore at such times, been omitted. The Trustees are again presenting as the project which in their judgment is most needed at present, an item of \$150,000 for a dormitory. This can, if necessary, be located south of South College on an existing steam main and adjacent to other service lines. It is proposed to build a dormitory that will accommodate approximately 100 students. By charging a rental somewhat less than that charged in private houses off the campus, it is estimated that a return of from 2% to 3% can be made to the State on this investment.

2. HORTICULTURAL MANUFACTURES BUILDING, \$60,000.

The importance of utilizing various by-products of the farm which formerly were wasted, such as fruit and vegetables, was emphasized during the war, and under the direction of Prof. W. W. Chenoweth of this institution farmers came to see whereby this saving could to advantage be made permanent. In order to give adequate instruction in the preservation of fruit and vegetable products, a new laboratory building is essential. The plans provide for a one-story building of inexpensive construction, which will furnish laboratories for the various phases of this work.

The pressing need for this building is now generally understood. However, some of the principal considerations may be recapitulated as follows:

a. The department of horticultural manufactures now has its work widely distributed in four buildings, viz. Flint Laboratory, Wilder

Hall, French Hall, and a workshop on the hill near the cold storage plant. This wide scattering of the work is obviously very detrimental to its objective.

b. The principal teaching is done at Flint Laboratory in rooms which were designed for use by the dairy department. The dairy department needs these rooms and would like to see the department of horticultural manufactures cared for elsewhere as soon as possible.

c. The present quarters are entirely inadequate for the teaching work. On account of the limited space the department has been compelled to refuse admission to numbers of students. This is perhaps the only department in the institution which has been compelled frequently to refuse admission to students on account of the lack of space. All the teaching could be much better organized and more efficiently conducted in a new building designed for this particular work.

d. It is highly desirable that vigorous research work be undertaken at the earliest opportunity in the field of fruit and vegetable preservation and the manufacture of by-products. A strong demand exists for this work among fruit growers, but the subject is equally important to all consumers of food in Massachusetts.

e. The department is now carrying on important extension work, but these extension projects need to be strongly supported by effective work at the college, and especially by well-directed research work.

f. The Massachusetts Fruit Growers' Exchange Association, the Boston Market Gardeners' Association and other organizations have urgently requested this proposed building. This demand from the fruit growers and vegetable growers should be squarely met.

3. ROADS AND WALKS, \$11,000.00

In order to provide improved roads for the main thoroughfares of the campus and to institute permanent walks it is proposed to build small sections of each from year to year. In 1927 it is desired to extend the macadam road started in 1923, a distance of 1800 feet, from the Library Building to the Power Plant. This section carries the heaviest traffic which comes to the campus and the present dirt road is entirely inadequate, especially during the seasons of frost and of heavy rains.

The estimate of \$10,000 is for a 5 inch crushed rock foundation with a 3 inch bituminous bound surface. It is also proposed to build a cement walk from South College to the Drill Hall, a distance of approximately 600 feet, costing \$1,000.00.

4. WOMEN'S GYMNASIUM AND EQUIPMENT, \$16,400.00

With the increased number of women students attending the College, the need of a woman's gymnasium becomes imperative. With the appropriation here requested it is proposed to erect a wooden frame building adjacent to the present Women's Dormitory. Placed in this location it will be unnecessary to duplicate dressing rooms and shower baths. The amount requested will provide for the necessary equipment for the building.

5. GRADING AREA SOUTH OF ATHLETIC FIELD FOR TENNIS COURTS, \$10,500.

In order to amplify the present inadequate facilities for outdoor games it is proposed to construct 10 tennis courts on the area immediately south of the present enclosed athletic field. The grading contemplated is on the basis of the permanent future development of the enclosed area. The expense for grading, surfacing, fencing, etc. is \$10,500.

6. NEW STEAM LINE, EAST EXPERIMENT STATION TO MICROBIOLOGY BUILDING, \$5,000.00

This project contemplates replacing a section of underground pipe line which is now in poor condition. The new line would be 385 feet shorter than the present one, thus effecting greater economy in operation.

7. GYMNASIUM, \$150,000.00

A gymnasium has for many years been considered as one of the most pressing needs of the institution. The present so-called Drill Hall offers no facilities whatever for gymnastic work or for other organized forms of physical education. The building is unsuitable even for the practice of basketball which is the only use to which the building is now put. The locker rooms and toilets adjoining the Drill Hall floor are extremely unsanitary and any improvement in their condition is practically impossible. It is proposed, therefore, with the appropriation here requested to begin the construction of a new building for physical education purposes along the lines of some of the buildings recently built at Dartmouth, Bowdoin, Amherst, etc., where they are using a large dirt floor cage owing to the rigorous winters we have. This would consist of two units—one containing dressing rooms, shower baths, swimming pool, boxing and wrestling room, office, supply room, a corrective gymnastic room, two class rooms, and then a connecting unit to this main gymnasium building where all the work ordinarily done out of doors in the Fall and Spring could be carried on throughout the winter.

8. FIRE TRUCK, \$2,500.00

The college fire protection is dependent on the equipment furnished by the Town of Amherst. When the present truck was purchased in 1915, this institution with Amherst College paid almost one half of the cost. This truck is about worn out and the town feels that a new one will have to be purchased very soon. The cost of a new, up-to-date machine would be \$10,000 and it is suggested that this College and Amherst College pay one half the cost, our share being one fourth or an amount not to exceed \$2,500.

9. STEAM HEAT AT POULTRY PLANT, \$2,400.00

It is proposed to heat the two laboratories with the exhaust steam from the Power Plant. Mr. Bovenzi estimates this work at \$2,400.00.

10. REPAIRS TO DURFEE RANGE GLASSHOUSES, \$7,000.00

The old Durfee Range of glasshouses was built in 1870 and holds one of the finest collections of tropical plants in this section of New England. It is in very poor condition and should be completely overhauled. The rebuilding of these houses to save this valuable collection should be done within the next 12 months. This would mean a considerable outlay for new sills, studs, rafters, posts, ventilators, benches, etc. and also reglazing and repainting. This would cost about \$7,000.00 but would mean the saving of a set of houses that could not be replaced at the present time for \$20,000.00.

11. CULVERT OVER BROOK IN RAVINE, \$3,000.00

In order to provide adequate storage for the large supply of coal which is being carried during the greater part of the year, it is necessary to construct a culvert over the brook in the ravine adjacent to the

Turbine House. The proposed culvert would be 200 ft. long, 4 ft. high and 5 ft. wide and could be built at an estimated cost of \$15.00 per linear foot.

REPORT OF THE DEAN

The question may rightfully be raised whether the Dean at this college should carry any considerable amount of teaching. If he does, the combination is certain to be strenuous even under the most favorable conditions. That he would be justified in devoting all his time and energy to work connected with the enlarged and ever enlarging scope of the Dean's Office needs no argument. And yet I feel that contacts with students, which are almost invaluable to an administrator, can be made only in the class room. Teaching also serves to break the somewhat monotonous routine work which has to be handled by any Dean. Again, to me personally, teaching is a real and inspiring stimulus and I have accordingly continued my teaching work in the Department of Mathematics. It is my hope to so organize the duties of the Dean's Office as to allow me to continue my work for the students in the double capacity of teacher and Dean.

During the two years prior to my appointment as Dean I held the double appointment of Acting Dean and Acting Registrar which gave me an excellent opportunity to study the close relation and interdependence of the work of these offices. As a result a reorganization was effected this year which merged the Registrar's Office with the Dean's Office. The Dean is in general charge of the newly organized unit. Under him are (1) an Assistant Dean, M. O. Lanphear, whose chief duty is in connection with matters of entrance and registration; (2) an Assistant to the Dean, Grace E. Gallond, in immediate charge of the office, routine matters concerning absences, appointments, requisitions, in a sense the Dean's personal Secretary; (3) Clerk, Olive M. Turner, who continues in charge of students records and as general assistant in entrance and registration routine; (4) a Stenographer, Emma Vondell, who also assists with Dean's and students' records.

All except Professor Lanphear have been in the office for a considerable number of years and are doing their work in a very commendable way. Professor Lanphear is a graduate of the institution, a successful teacher and a sympathetic friend of the students. He has already made a creditable beginning in the new organization.

For the purpose of encouraging scholarship a system of Honor Groups was introduced at the opening of the fall term. This system recognizes three groups of honor students. The first group includes the names of all students, excepting Freshmen, whose term average for all courses is above 90 per cent. The second group all those between 85 and 90 per cent, and the third group those between 80 and 85 per cent.

These groups are posted on the Dean's Board at the beginning of each term. Students in the first two groups are allowed great freedom in the matter of class absences. The system is receiving much favorable comment from both faculty and students, and appears to act as a real stimulus for the improvement of scholarship. At the beginning of the first term the list posted contained the names of six students in Group I, thirty-seven in Group II, and forty in Group III.

The Honor Council has functioned satisfactorily and the limited number of cases referred to it were handled with justice and dispatch. The nerve racking cases of excessive cutting and serious infringement of necessary regulations were very few indeed. The spirit of real co-operative endeavor between the student body and those in authority on matters of institutional policy and practice was all that could be reasonably expected.

Much credit is due to the following who assisted the Dean as faculty advisers to the new students:

Ass't. Dean M. O. Lanphear

Professors F. P. Rand, Paul Serex, A. N. Julian, Richard W. Smith,

Miss Skinner, Miss Knowlton

Instructors L. L. Durkee, Philip Couhig.

Their helpful counsel and sympathetic direction constitute a service which is greatly appreciated by parents and students.

During the year I have accepted a number of invitations to speak to groups of high school and junior high school students throughout the state. These contacts are valuable in promoting cordial relations and better acquaintance with the schools, and in the opportunity they afford of giving first hand information concerning matters of entrance and lines of work offered at the college.

As to immediate problems the following are noted without extended comment:

1. A definite plan for a more helpful "subjective analysis" of students through tests, achievements, personality ratings, tastes and scholastic tendencies. Only in this way can we make our personnel work really effective.

2. An exhaustive study of the entire problem of "student aid." The effect of part time employment, monetary gifts and easy loans on the students' scholarship and, also, on his social and economic perspective, are recognized as both harmful and beneficent. When, how, to what extent and on what grounds should a student be aided financially? Can part time employment be tied up with a student's vocational objective? These and other questions press for solution.

3. The new problems forced to the front by the influx of women students during the last four or five years. These problems are both administrative and academic and concern themselves with the social, physical, scholastic, and moral welfare of the entire group. One can say without fear of contradiction that no satisfactory or lasting solution can be reached until we solve the questions of housing, recreational facilities, and curriculum adjustments.

WILLIAM L. MACHMER,

Dean.

REPORT OF THE DIRECTOR OF THE EXTENSION SERVICE

The number of men and women seeking and taking part in self-education is constantly increasing. Through our contacts with meetings of Trustees for county aid to agriculture, we see a continual growth of the work being done by the members of the county extension services. This growth shows more and more people are taking advantage of an educational opportunity which comes to their communities, to their farms and homes, increasing to a great degree the work of the county agents in agriculture, home-making and boy and girl clubs.

As this condition develops, it reacts directly by requiring increased services of our college extension staff. The problem before us of how to meet this increasing demand is not an easy one to answer. We are continually readjusting our time and activities in order to take on new duties. Yet, with some of our subjects, we have not been able to satisfy the requirements made upon us. In order to comply with the many inquiries and requests that come to us for instruction in the field, we have been asking the resident staff to give us assistance. In looking over the records, we find at least twenty members of the resident college and station staffs have taken part in the field work.

Looking back over the past year, there is much evidence to make us believe satisfactory progress has taken place in the projects which have been under way. Progressive work by our specialists and by the

county extension services can be pointed to on the basis that increasing requirements of them indicate their work must have been satisfactory or the services requested would diminish rather than increase. It is very seldom that our facilities meet the full demands made upon us. We are unable to fill all the requests made by county extension service managers for our specialists.

Through its educational work on the value of milk as a food, the New England Dairy and Food Council is well serving the dairy industry in the eastern part of the state by co-operating with many of the units composing the following:

Schools
Settlements
Parent-Teachers Assoc.
Health Centers
Y. W. C. A.
Y. M. C. A.
Industrial Centers
Granges
Red Cross
N. E. Dairy Vacation
Bible Schools

Kindergarten Mothers Clubs
Tuberculosis Associations
Dispensaries
Out-Patient Dept.-Hospitals
In-Patient Dept.-Hospitals
Stores
Bank-Post Office
Fairs
Playgrounds
Teachers Conventions
District Nursing Association

It also carries on an advertising campaign, emphasizing the food value of milk. The extension service co-operates in this effort through its employment of one-third of the time of the secretary, Wm. P. B. Lockwood.

We find there are more cow test associations in the state than ever before. About 280 herds are now numbered in the membership of the associations and these include between 2,800 and 3,000 cows. This is the largest number of cows recorded in the cow test associations at any one time. This trend points to the fact that there is a keen interest by those owning herds and that more attention is being paid to locating the unprofitable cow and improving the method of handling the herd.

The investigation which was made of conditions in the tuberculosis eradication program has stimulated a greater interest in controlling this disease. The Hampden County Improvement League played an important part in this investigation, which has resulted in an improved program for eradicating the infected cow.

In looking over the reports applying to the agronomy projects, it is evident that alfalfa is receiving much attention. County agents have been using the specialist to bring about the correct practices in seeding and handling this crop. Acreage increases are reported in nearly every county and successes seem more prevalent than previously.

With the orchardists, the spray service has been very valuable. Specialists stationed in the field determined the proper time to spray orchards to prevent the spread of scab disease. To control scab, it was necessary to find out the time the spores of this disease would be expelled and then notify many growers through a telephone service, so they might cover their trees with spray material in time to prevent infection. The orchardists of the state continue to hold numerous meetings during all seasons of the year, taking up with the specialists many subjects in cultural and distribution problems that the growers may be well informed.

The specialist handling the subject of home storage and horticultural manufactures sees an increasing number of his plans being put into practice on the farm. Many growers now have their own storage cellars which keep their apples in good condition until they can be properly graded, packed and marketed. A larger number of persons attended canning demonstrations in 1926 than in any year since 1918.

The extension specialist in market gardening has been continually

in touch with the men in the industry. Demonstrations in packing and grading vegetables were given groups and individual market gardeners, using the standards developed by the Boston Market Gardeners Association. One of the special projects of the year has been the work with this association in the grading of vegetables.

Under the subject of farm management, we find a very active interest on the part of poultrymen in keeping accounts in order to study the facts which they bring out. The farm management specialist receives these records monthly, summarizes them and returns the results. The farm management specialist also assisted the county agents in conducting several tours, on which the farmers discussed among themselves the problems of finances, farm management and rearranging farm business, in order to get the best practical results.

The forestry project has made a beginning and we find towns and cities have been encouraged to plant town forests. A survey of the state, taking account of the forest lands and those available for forest purposes, has been made by the state extension forester. One of the interesting developments of the year in this subject was a trip conducted by the Worcester and Middlesex county extension services, showing to those who were in attendance the results of careful and intelligent management of the farm forest, as well as the possibilities in commercial and natural reforestation. The forestry extension project is conducted in co-operation with the Massachusetts Department of Conservation.

The home economics work of the extension service has progressed in two subjects, nutrition and clothing. While we have been able to do a little work with the subject of home management through the services of a specialist who was employed for a short period of time, we have been able to meet only a small part of the demands.

Increased activities are conspicuous in the nutrition work. While substantial progress has been made in past years, the reports this year show there has been a fourfold increase in the number of women enrolled in project work; in the acceptance of approved projects, and in the passing on of this information to others. At the summer project meetings, able speakers stressed nutrition problems to large audiences. This has helped to spread the knowledge of the project, resulting in the marked increases noted.

The clothing project has been handicapped during the latter part of the year through the loss of Miss Knight at the time of an automobile and train accident on Cape Cod. To date, we have not been able to find anyone to take her place.

Club work in Massachusetts has moved along very satisfactorily state wide. Enrollments have held up, camps have been successful, and the obtaining of local leaders has been generally successful. The growth in the number of club members acting as local leaders has been greater than could have been expected. This has made the county club agents look to the future and they have given much thought to the two following problems:

1. How shall the interest of the older club members be continued in the work?

2. How shall the subject matter information needed by local leaders be made available?

The number of girls and boys whom we find entering college or normal school from club work during the past year totals 103. The continual entrance of club members into higher institutions of learning results in many young people graduating from college and returning to their communities as active leaders in promoting extension work.

The staff conferences held every other week give each specialist the opportunity to contribute of his experience and opinions. These conferences do much to promote staff harmony and efficiency.

During the period between June 20th and 25th, the county agents,

with the county agent leader, visited New Jersey where they were conducted by officials from the New Jersey extension service to the important agricultural sections of the state, as well as to the New Jersey experiment station. This trip gave them an opportunity to see and have explained how the county agents of New Jersey were working with the farmers in all branches of agriculture, demonstrating the most efficient methods.

Bulletins and printed and mimeographed matter are being used wherever possible to supplement the work of the specialists. We are revising our list of publications as well as their contents. Mailing lists are being corrected and we intend that only those who can receive value from our publications will have their names retained.

Radio is becoming more of a factor in extension work. Sixty-two broadcasts were given by members of the extension and college staffs from WBZ and WTAG, as well as a number of miscellaneous talks from the Houghton and Dutton studio of WEEL. These broadcasts brought over 1,200 enrollments to the radio correspondence courses, as well as the receipt of 100 to 200 letters of inquiry per week. Plans for the winter of 1926-27 have been completed for broadcasting agricultural and home economics material from WEEI and WNAC in Boston and WBZ in Springfield. This material is handled in co-operation with the U. S. Department of Agriculture.

Correspondence courses are in a transition stage. Facilities for handling them are very limited and some courses are in need of re-writing. The question of how much we can do with them depends on whether proper and adequate supervision can be secured. There are many opportunities to use correspondence courses to supplement other forms of extension teaching.

Members of the extension service attended and assisted at 22 agricultural fairs, representing 266 days total time. At six of these, special exhibits were supervised and at the Union Agricultural Meeting in Worcester, an extensive exhibit was arranged. Farm and Home Week was attended by nearly 4,000 people, many of whom commented on the practical knowledge obtained from the program.

Poultry husbandry includes, in addition to the general extension activities of lectures, demonstrations and visits to poultry farms having perplexing problems, a close relationship to the Massachusetts Federation of Poultry Associations with a membership of 31 local associations and the Massachusetts Association of Certified Poultry Breeders. Disease control, better breeding, raising of increased amounts of green feed and improved poultry plant organizations are problems all of which come in the work outlined in the projects designed to be of assistance to the poultry industry.

The peak of the economic trouble in the tobacco industry passed during the year, and the situation, while not yet satisfactory, is much easier. Members of the extension and county staffs answered many inquiries from tobacco growers.

A considerable number of changes have taken place in the extension staff. During the year, we have been without an extension specialist in marketing, having been unable to locate a man with satisfactory training and experience who would come at the authorized salary. As a result, a most important project has lagged. Need for educational work in distribution and marketing of crops is further emphasized by the New England Farm Products Marketing Conference in Boston December 9th and 10th, 1926. This conference focused attention on the problems which face New England farmers in the marketing and distribution of their crops. It gave definite expression to the need for the establishment of voluntary standards for farm products and their identification. It requested that the extension service carry on an intensive and comprehensive educational campaign with growers to bring to their attention the value that can be obtained by using these stand-

ards and the brands and labels with which they can be identified. Aside from this educational work which will need to be included in the programs of most of our specialists, we shall need to carry on the work in marketing already in hand.

Co-operation with the U. S. Department of Agriculture has continued satisfactorily.

During the next year, we plan to give special attention to the educational problems of distribution and marketing agricultural products and to the making of rural homes more convenient and attractive, as well as reducing home makers' burdens. We hope to be able to fill the vacant positions on the staff, though we are having difficulty in locating suitable trained persons who will come at salaries authorized.

WILLARD A. MUNSON,

Director of the Extension Service.

REPORT OF THE DIRECTOR OF THE EXPERIMENT STATION

The year just passing has in general been prosperous. There have been fewer resignations than has been the case the past few years, the increased support coming from the Purnell fund has enabled the Station to enlarge the scope of its work, and a new policy relative to the printing of Experiment Station bulletins has bettered its publication service.

During the year work was instituted in home economics, through the service of Miss Helen Knowlton, who received a six months' leave of absence from the College for this purpose. There is every reason to believe that this important branch of work is well started. New work also has been instituted in horticultural manufactures, and in dairy manufactures. Owing to difficulty in finding suitably prepared men, work long contemplated in the department of farm management has not as yet been actually started.

The only serious loss of the year was the burning of the main building of the Cranberry Station, early in the morning of May 31st, last. The action of the Governor's Council in appropriating money for the building and partial equipment of the Station is much appreciated, and has enabled the cranberry research to be prosecuted with a minimum of loss. Fortunately all of the records were in a fireproof safe, and were undamaged.

Looking ahead certain slight changes in financial organization seem to be necessary. The Station orchards are growing and its flocks are increasing. Year by year costs are increasing in the way of tillage, pruning, fertilizing, feeding, spraying and marketing. Income also increases, varying of course with prices. Our appropriation, however, does not increase to meet the need. In principle, allowance from an emergency fund to care for extraordinary harvesting costs is sound. In practice it is a cumbersome plan, and too inelastic to make possible the most efficient administration. It is recommended, therefore, that this problem of financing on productive operations be given careful consideration.

In addition to the foregoing there should be a more definite policy with relation to professional improvement, particularly of the younger staff members. No program relative to professional improvement has ever been agreed upon, partly on account of apparent cost. This cost, however, cannot be avoided. It must be met, and is being met, either in the salary paid to a trained person, or in time allowed to younger staff members for study, or in the poorer service received from untrained persons. Further delay in reaching decision is dangerous.

Finally, it is gratifying to report continued progress in all of the control and regulative activities vested in the Experiment Station, and particularly in the work leading to the elimination of certain poultry

diseases. With the very modest increase in financial support, changes in organization have resulted in a \$3389.90 increase in income, and a 33,899 increase in number of tests run during the last fiscal year. It is expected that this work for the present testing season will be completed very early in the new year. If so, then for the first time the Experiment Station will have met the real need as far as this particular service is concerned.

S. B. HASKELL,

Director of the Experiment Station.

REPORT OF THE DIRECTOR OF THE GRADUATE SCHOOL

During the past year there have been registered in the Graduate School eighty-seven students. Of this number twenty-eight were registered in the summer quarter. Due to the fact that in high schools elective subjects and elective courses are abundantly available, largely for the purpose of specialization in vocational pursuits, there have arisen in graduate schools some seriously troublesome problems. Specialization in some aspect of agriculture in much the same form may begin in the high school and continue in college and reach the graduate school. In high school and college little attention may be given to studies considered in any liberal education or basic to the vocation itself. This situation results in barring the way to professional studies because, to pursue more advanced professional studies, basic studies are required, and to pursue basic studies, there must be certain prerequisite preparation. This almost completely excludes certain types of college graduates from farther advancement unless they are willing to retrace their steps. This condition in varying degrees affects many graduate students.

At the June Commencement nine students received advanced degrees. Their names and the subjects of their theses are listed below:

Doctor of Philosophy

Joseph Raymond Sanborn

Physiological Studies in Cellulose Fermentation

Master of Science

Frederick Sheldon Bartlett

The Relation of Hydrogen-ion Concentration to the Speed of Inversion of Sucrose

Martin E. Cupery

A Further Study of the Condensation Products of Resorcinol

Mary Joan Foley

Highway Financing in Massachusetts

Hovanes Garabedian

A Comparative Study of the Official Method for Determining Furfural and Pentosans and a Colorimetric Method

Gerald Matthew Gilligan

The Influence of the Hydrogen-ion Concentration on the Electrolyte Requirement for the Coagulation of Bentonite Dispersions

Donald Sewall Lacroix

The Life History and Control of the Cranberry Weevil *Anthonomus musculus* Say (Coleoptera: Curculionidae) and Other Papers

Marshall Olin Lanphear

An Ecological Study of Pasture Cover

Gordon Pittinger Percival

The Viscosity and Surface Tension of the Principal Proteins in Ice Cream

CHARLES E. MARSHALL,

Director of the Graduate School.

REPORT OF THE DIRECTOR OF SHORT COURSES

The College awarded certificates to sixty-six graduates of the Two-Year Course in June, of whom eight were women. A total of 464 students have been graduated in seven years. A special feature of the Commencement exercises was the splendid address presented by Dr. Carl Edward Ladd, Director of Extension Service, of the New York State College of Agriculture, Cornell University.

At this time we are able to present the results of a survey, made late this fall, indicating what these most recent graduates are doing. Of the sixty-five men, regular and special students, sent out, we find them engaged in:

Animal Husbandry or General Farming	18
Pomology or Fruit Growing	10
Poultry	9
Floriculture	6
General Horticulture	5
Dairy Manufactures	3
Vegetable Gardening	3
Taking further study	3
Non-agricultural work	1
Occupation unknown	7

Despite a serious depression in agriculture the country over, these figures indicate a satisfactory outlook for agricultural opportunities in Massachusetts.

During the summer eighty freshmen were located in positions for their six-months' required practice work. Our records of failure in this type of supervised training are surprisingly low, only six men being disqualified during the term and six others withdrawing.

Placements were distributed as follows, with average monthly wage received:

Major course	No. of students	Average monthly wage
Animal Husbandry	15	\$90.42
Dairy Manufactures	8	93.50
Floriculture	13	83.54
Horticulture	8	99.81
Pomology	11	87.82
Poultry	22	84.45
Vegetable Gardening	3	82.67
Total earnings for the entire group		\$39,113.12

Mr. Viets reports that eighty-eight employers were used to meet the training requirements for the students. Fifty-one of these employers were hiring students for the first time; eighteen had students placed with them for the second time, or more; and seventeen had students once before. It is evident that new contacts have to be made throughout the year if a sufficient number of desirable positions are to be secured regularly for placement training. We are extremely fortunate to have this work so well organized and so smoothly functioning.

An increasing number of requests are coming to us each year to recommend graduates for new positions. We are developing our system of records to meet the needs of this new service, both for employer and student. No graduate is recommended for a position whose qualifications are in any way questionable. We feel it is better to leave the position unfilled than to place a man unsuited for the work.

The growing importance of such college placement service is being recognized by all branches of industry seeking trained men. The enthusiastic response on the part of representatives from nearly all the New England colleges in organizing recently an employment officers'

association shows a sincere desire to meet the new demands. It is worth recording here to state that our own college has assisted in this pioneer undertaking through the services of Paul W. Viets as first president of the organization.

Apparently the levying of a tuition charge for the first time has not seriously affected the Two-Year enrollment. While the number of freshmen, eighty-seven, is slightly less than the registration for 1925, the advance inquiries for 1927 seem to be well ahead of previous years. With seventy-eight seniors registered for the second year, the total enrollment is 165.

Winter School

The 1926 Winter School had a smaller registration than usual, sixty-eight students enrolling. It is possible that this phase of our work is being largely supplanted by the far-reaching and intimate personal service rendered by our County Extension organizations. The development of the College Extension service, with its radio broadcasts and special courses, may well supply a new educational influence, dispensing with the old. The spoken voice and personality pass through the air, much as in the classroom; only the physical presence of the instructor is lacking.

Summer School

In eliminating some of the preparatory courses in addition to stipulating high school graduation as a minimum requirement for any work in the summer school, a reduction in students was expected. This was offset, however, by a slight increase in the number of teachers enrolling, making our total of 168 practically the same as last year.

With excellent instructors and a well balanced program, coupled with the summer charms of our campus, we look for an increasing appreciation of these opportunities by the teachers of the state. The unusual recreation program made available last summer brought the joy of riding to many, and we think, like vaccination, "it will take."

New lines of work were undertaken during the year in helping finance the annual one-day program for the Massachusetts Veterinary Association, as organized and directed by the Department of Veterinary Science of the College. Nearly fifty members of the association were in attendance.

A one-week school for Country Ministers was held the last week in July co-operating with Rev. Kenneth C. MacArthur, rural secretary of the Massachusetts Federation of Churches. An attendance of twenty-five gives reason to continue similar plans for another year. A large part of the program was furnished by the College staff, for whose cordial help I wish to express sincere thanks.

Our new moving picture machine is being called into frequent use and is proving a valuable agency to supply accurate visual information on the work of the College.

The new problems of teaching adjustment are being given thoughtful consideration by members of the Two-Year staff who are aiding in every way to enable our Short Courses to turn out trained workers and responsive citizens.

ROLAND H. VERBECK,
Director of Short Courses.

REPORT OF THE LIBRARIAN

There are now in the library 77,472 volumes bound and catalogued; in addition there are a large number of uncatalogued books, and over fifty thousand pamphlets. During the past year 2,406 volumes were added and catalogued. The number of department libraries at present

is forty seven, including the Market Garden Field Station at Waltham and the Cranberry Field Station at Wareham. The volumes in these department libraries are all catalogued in the main library, so that all books belonging to the college are available to all members of the college.

During the period since the last annual report, numerous changes have been made in the library. The list of periodicals subscribed to by the library has been revised by painstaking efforts of the library committee and considerable saving has been made without depriving any department of necessary material. All the lights in the building have been altered so that instead of being visible, all are now shaded, thus preventing eye strain for readers from whom there had been constant complaint. The amount of current was also lessened in this way about one third, although the actual illumination is doubled in most cases. The wiring has been so altered that all current is cut off from the building at night; thus risk of fire when the building is without occupants is greatly reduced. All magazines likely to be of use to readers are now kept in the reading room in a simple arrangement, so that much time is saved for readers in consulting them. All the books in the building have been reshelfed so that they are now in order, and space is allowed for growth for several years. The gallery has been provided with inexpensive shelving and these have been filled with books less often consulted. The tower has also been opened for library use and space for over five thousand volumes, besides an attractive study alcove, has been thus gained. The basement, which was in almost incredible disorder, has been almost entirely gotten into order, and will be entirely so within a few months. The College History Collection has been largely put in order. The library is looking forward to the gift to this collection by Professor Waugh, of many of his well known portrait photographs of men connected with the college. Large numbers of books in disrepair and lacking labels have been repaired or labelled, chiefly by student labor, properly supervised. The catalog has been moved from a back corner of the stack room to a place beside the main entrance, thus permitting much readier use and making a much more convenient entrance to the main floor and better access to the reference and circulation desk.

The pamphlet collection, which is large and valuable has been largely placed in order and work upon it is actively being done.

The diligent and intelligent service of the library staff in all these changes and improvements, which have involved over-work for long periods cannot be over praised and certainly deserve such recognition as it is possible to give them.

The overwhelming need of the library at the present time is to be made safe from fire; its loss would be an irreparable blow to the college and the electric wiring now in place is exceedingly dangerous. Of course more space is needed, especially for the work of the staff, but the building as it is at present allows room for the number of students now in the college and for considerably more books than are now housed in the building. The building is well lighted and well warmed, and its very compactness is a distinct element of convenience and permits the rapid service which students now find in using the library.

BASIL B. WOOD,
Librarian.

TABLE I.—NEW APPOINTMENTS.

A. *In the Academic Departments.*

Assistant Professor of Farm Management: Rollin H. Barrett, B.S., Connecticut Agricultural College, 1919; M.S., Cornell, 1926.
Stenographer, Division of Horticulture: Edith E. Benson.

- Instructor in Mathematics: Harold D. Boutelle, B.S., Worcester Polytechnic Institute, 1920; Ch.E., 1922.
- Instructor in Physical Education: Philip H. Couhig, B.Sc., Massachusetts Agricultural College, 1926.
- Assistant Professor of Agronomy: Miles H. Cubbon, B.Sc., Cornell, 1921; Ph.D., 1925.
- Assistant Professor of Rural Sociology: Frederick M. Cutler, A.B., Columbia, B.D., Union Theological Seminary, 1898; Ph.D., Clark, 1922.
- Instructor in German: L. Leland Durkee, B.Sc., Massachusetts Agricultural College, 1926.
- Instructor in Entomology and Bookkeeping: Clayton L. Farrar, B.S., Kansas State Agricultural College, 1926.
- Professor and Head of the Department of Dairying and Animal Husbandry: Julius H. Frandsen, B.S.A., Iowa State College, 1902; M.S.A., 1904.
- Instructor in Microbiology: James E. Fuller, A.B., Colorado College, 1911; A.M., 1925.
- Instructor in Zoology: Chauncey M. Gilbert, B.Sc., Massachusetts Agricultural College, 1925.
- Field Agent: William I. Goodwin, B.Sc., Massachusetts Agricultural College, 1920.
- Bookkeeper: Mary E. Honnay.
- Clerk, Treasurer's Office: Edna E. Kahler.
- Library Assistant: Mrs. Nan L. Kelly.
- Instructor in Agronomy: Oliver W. Kelly, B.Sc., Colorado Agricultural College, 1924.
- Instructor in English: Alfred Nicholson, A.B., Princeton, 1921; M.A., 1926.
- Instructor in Pomology: Oliver C. Roberts, B.Sc., Massachusetts Agricultural College, 1919.
- Instructor in Vegetable Gardening: Gerald J. Stout, B.S., Michigan State College, 1924; M.S., 1926.
- Stenographer, Short Courses: Kathryn V. Toole.
- Assistant Professor Home Economics: Marion L. Tucker, B.S., Columbia, 1914.
- Curator in Chemistry: Edwin O. Turner.

B. In the Experiment Station.

- Assistant Research Professor of Botany: Linus H. Jones, B.Sc., Massachusetts Agricultural College, 1916; M.Sc., 1919; Ph.D., Rutgers, 1922.
- Investigator in Pomology: Ray G. Smiley, B.Sc., Massachusetts Agricultural College, 1926.

C. On Purnell Funds.

- Clerk, Department of Agricultural Economics: Marian V. Brown, B.A., Wellesley, 1926.

D. In the Control Service.

- Analyst: Marvin W. Goodwin, B.Sc., Massachusetts Agricultural College, 1926.
- Specialist: Henry Van Roekel, D.V.M., Iowa State College, 1925; M.S., Virginia Polytechnic Institute, 1926.
- Field Agent: Clifton B. Waite.

E. In the Extension Service

- Assistant State Club Leader: Marion E. Forbes, Framingham Normal School, 1919.

Stenographer: Olive L. Gillett.

Chief Clerk: Ruth E. Merrick, A.B., Mount Holyoke, 1922.

Director: Willard A. Munson, B.Sc., Massachusetts Agricultural College, 1905.

Extension Editor: Grunow O. Oleson, B.S.A., University of Wisconsin, 1925; M.S.A., 1926.

Clerk: Lora A. Ward.

Stenographer: Ethel M. Wood.

TABLE II.—SPEAKERS FOR THE YEAR

A. *Speakers at Assembly for the year ending Nov. 30, 1926*

1925

Dec. 3. Mr. Royal B. Farnum, Boston.

Dec. 10. Rev. J. Burford Parry, Springfield.

1926

Jan. 6. Mr. Adam Wilkinson, Holyoke.

Jan. 13. Professor David Morton, Amherst College.

Jan. 20. Mr. Clifford Marle, Northampton.

Jan. 27. Major N. B. Briscoe, M.A.C.

Feb. 3. Mr. Charles E. Westervelt, Northampton.

Feb. 17. Student forum.

Feb. 24. Professor Dallas Lore Sharp, Hingham.

Mar. 3. Mr. Frank L. Boyden, Deerfield.

Mar. 10. Professor Harry F. Ward, New York City.

Mar. 31. Mr. M. S. Sherman, Springfield.

Apr. 7. Mr. Edward C. R. Bagley, Boston.

Apr. 14. Mr. Gaylord W. Douglass, Wilbraham.

Apr. 21. Professor Lawrence B. Packard, Amherst College.

Apr. 28. Mr. John F. McNamara, Northampton.

May 5. Student forum.

May 19. Mr. John D. Willard, M.A.C.

May 26. President Edward M. Lewis, M.A.C.

Sept. 16. President Edward M. Lewis, M.A.C.

Sept. 23. Mr. W. H. Kendrick, Morgantown, W. Va.

Oct. 14. Mr. M. J. Brines, Boston.

Oct. 21. Mr. James T. Nicholson, Washington, D. C.

Oct. 28. Mr. Charles H. Gould, Haydenville.

Nov. 4. Professor Frank P. Rand, M.A.C.

Nov. 11. Professor John M. Tyler, Amherst.

Nov. 18. Mr. Waitstill Sharp, Boston.

Dec. 2. Student forum.

Dec. 9. Mr. Ramsay Muir, London.

B. *Speakers at Sunday Chapel for year ending Nov. 30, 1926*

1925

Dec. 6. Rev. Edwin B. Robinson, Holyoke.

Dec. 13. Bishop W. F. Anderson, Boston.

1926

Jan. 10. Principal Alfred E. Stearns, Andover.

Jan. 17. Rev. Samuel A. Eliot, Boston.

Jan. 24. Bishop Edwin H. Hughes, Chicago.

Jan. 31. Mr. Wiley H. Swift, New York City.

Feb. 7. Dean Charles R. Brown, New Haven, Conn.

Feb. 14. Rev. Daniel C. Evans, Cambridge.

Feb. 28. President Paul D. Moody, Middlebury, Vt.

Mar. 7. Rev. Joseph H. Twichell, Williamstown.

Mar. 14. Rev. Frank W. Padelford, New York City.

Apr. 11. Rev. John B. Hanna, M.A.C.

Apr. 25. Mr. Albert E. Roberts, New York City.
 May 2. Rev. Nehemiah Boynton, New York City.
 Nov. 7. Rev. Robert R. Wicks, Holyoke.
 Nov. 14. Rev. A. L. Kinsolving, Amherst.
 Nov. 21. Dr. William I. Chamberlain, New York City.

TABLE III.—ATTENDANCE.

	REGISTRATION NOV. 1, 1925			REGISTRATION NOV. 1, 1926		
	Men	Women	Total	Men	Women	Total
<i>A. In Work of College Grade.</i>						
Graduate Students	42	5	47	33	6	39
Senior Class	90	15	105	77	10	87
Junior Class	83	11	94	89	21	110
Sophomore Class	110	28	138	115	30	145
Freshman Class	140	39	179	150	35	184
Special Students	4	5	9	4	—	4
Totals	469	103	572	468	102	570
<i>B. Short Course Enrollment.</i>						
Two-year Course, second year	75	9	84	69	9	78
Two-year Course, first year	93	12	105	78	9	87
Vocational Poultry Course	3	—	3	6	—	6
Two-year Course, special students	—	—	—	—	—	—
Totals	171	21	192	153	18	171
<i>C. Other Short Course Enrollment.</i>						
Winter School	76	10	86	58	10	68
Summer School	58	113	171	51	116	167
Totals	134	123	257	109	126	235

D. Convention Registration.

	1925.	1926.
University Extension Industrial Institute	—	58
Polish Farmers' Day	175	225
Farmers' Week and Annual Poultry Convention	3,000	3,500
Junior Boys' and Girls' Prize Winners' Camp	125	110
Extension Workers' Conference	100	100
Women's Clubs	50	—
Lawn Day	67	26
School for Veterinarians	52	70
Meeting of Grange Lecturers	100	—
Hampshire County Fruit Meeting	35	—
Tri-State Conference on Clothing	50	—
Middlesex County Club Champions	100	80
Camp Vail Training School	40	—
Regional Meeting of Fertilizer Dealers and Manu- facturers	—	75
High School Day	636	718
	4,530	4,962

**TABLE IV.—STATISTICS OF FRESHMEN ENTERING MASSACHUSETTS
AGRICULTURAL COLLEGE, SEPTEMBER, 1926.**

A. Home Addresses of Students (classified by Towns and Cities)

Adams	2	Framingham	2	Northbridge	1
Agawam	1	Franklin	1	Northfield, Vt.	1
Allentown, Pa.	1	Georgetown	1	Norton	1
Amesbury	1	GLOUCESTER	4	Orange	1
Amherst	9	Goshen	1	Otis	1
Andover	1	Greenfield	5	Palmer	1
Ashfield	1	Greenwich, Conn.	1	Pepperell	1
Astoria, L. I.	1	Hadley	1	PITTSFIELD	2
ATTLEBORO	4	Hamilton	1	Plainfield	1
Auburn	1	HAVERHILL	1	Plainville	1
BANGKOK, Siam	1	Hardwick	1	Plymouth	1
Barre	1	Holbrook	1	Provincetown	1
Belchertown	1	HOLYOKE	9	Pugwash, Nova Scotia	1
Belmont	2	JACKSONVILLE, Fla.	1	QUINCY	1
Berlin	1	LAWRENCE	1	Reading	1
Bethany, Conn.	1	Lee	1	Ridgewood, N. J.	1
BEVERLY	1	LEOMINSTER	2	Rowe	1
BOSTON	9	Leyden	2	Rowley	1
Boxford	1	Little Compton, R. I.	1	SALEM	1
Bridgewater	1	Lucea, Jamaica, B. W. I.	1	Sandwich	1
Brimfield	1	LYNN	2	SCHENECTADY, N. Y.	1
BROCKTON	2	MALDEN	1	Sheffield	1
BROOKLYN, N. Y.	1	Marblehead	1	Somerset	1
CAMBRIDGE	1	MELROSE	1	SOMERVILLE	2
Chatham, N. Y.	1	Mendon	2	Southbridge	4
CHICOPEE	2	Merrimac	2	SPRINGFIELD	9
Colrain	1	METHUEN	1	Springfield, Vt.	1
Cummington	1	Milford	1	Sterling	1
Dalton	1	Millbury	1	Stoneham	1
Dartmouth	1	Millis	1	TAUNTON	2
Daytona Beach, Fla.	1	Monson	1	Walpole	3
Dedham	1	Natick	1	Webster	1
Dover	1	Needham	3	West Boylston	1
Eastham	1	NEW HAVEN, Conn.	2	Westminster	1
Easthampton	1	NEWTON	2	West Springfield	1
FALL RIVER	1	NORTH ADAMS	1	Weymouth	1
FITCHBURG	3	NORTHAMPTON	2	Winthrop	1
				WORCESTER	7

B. Home Addresses (classified by States and Countries)

	Number	Per Cent.		Number	Per Cent.
Connecticut	3	1.62	Pennsylvania	1	.54
Florida	2	1.03	Rhode Island	1	.54
Jamaica, B. W. I.	1	.54	Siam	1	.54
Massachusetts	168	90.81	Vermont	2	1.03
New Jersey	1	.54			
New York	4	2.16		185	99.99
Nova Scotia	1	.54			

C. Home Addresses (classified by Counties of Massachusetts)

	Number	Per Cent.		Number	Per Cent.
Barnstable	3	1.79	Middlesex	15	8.93
Berkshire	10	5.95	Norfolk	14	8.33
Bristol	10	5.95	Plymouth	4	2.38
Essex	20	11.91	Suffolk	10	5.95
Franklin	10	5.95	Worcester	28	16.66
Hampden	25	14.88			
Hampshire	19	11.31		168	99.99

D. Nativity of Parents

	Number	Per Cent.
Neither parent foreign born	114	61.62
Both parents foreign born	42	22.70
Father (only) foreign born	11	5.94
Mother (only) foreign born	18	9.74
	185	100.00

E. Education of Father

	Number	Per Cent.
Common School	80	43.24
High School	45	24.32
Business School	16	8.65
College or University	31	16.76
No statistics	13	7.03
	185	100.00

F. Occupation of Father

	Number	Per Cent.
Agriculture and Horticulture	38	20.54
Artisans	34	18.37
Business	67	36.21
Professional	15	8.10
Miscellaneous	14	7.56
Deceased or no statistics	17	9.18
	185	99.96

G. Intended Vocation of Student

	Men	Women	Total	Per Cent.
Farming	27		27	14.59
Landscape Gardening	19	1	20	10.81
Floriculture	9		9	4.86
Entomology	2		2	1.08
Chemistry	24	4	28	15.13
Forestry	11		11	5.94
Agricultural Teaching	3		3	1.62
Other Agricultural Work	3		3	1.62
Engineering	4		4	2.16
General Teaching	10	10	20	10.81
Religious and Social Work		1	1	.54
Medicine	6	2	8	4.32
Law	2		2	1.08
Journalism		1	1	.54
Business	4		4	2.16
Domestic Science Teaching		4	4	2.16
Extension Service	1	4	5	2.70
Library Work		1	1	.54
Undecided	25	7	32	17.29
	150	35	185	99.95

H. Farm Experience

Brought up on a farm	39	9	48	25.94
Not brought up on a farm and having no or practically no farm experience	65	23	88	47.57
Not brought up on a farm but having had some farm experience	46	3	49	26.43
	150	35	185	99.99

I. Miscellaneous Statistics

Average age (years)	18.86
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REPORT OF THE TREASURER

For the Fiscal Year Ending November 30, 1926.

BALANCE SHEET

1925	DEBIT	CREDIT
Dec. 1. To balance on hand	\$40,022.14	

1926	DEBIT	CREDIT
Nov. 30. To departmental income	188,950.75	
Nov. 30. To Receipts from State Treasurer	719,258.78	
Nov. 30. To refunds to State Treasurer	6,526.37	
Nov. 30. To Receipts from United States Treasurer	126,868.08	
Nov. 30. To bills paid by State Treasurer	209,725.32	
Nov. 30. To Refunds transferred to State Treasurer		\$6,526.37
Nov. 30. Expenditures for fiscal year		1,052,988.27
Nov. 30. Income transferred to State Treasurer		188,950.75
Nov. 30. Balance on hand		42,886.05
	<u>\$1,291,351.44</u>	<u>\$1,291,351.44</u>

STATEMENT OF LEGISLATIVE APPORTIONMENT AND EXPENDITURES FOR
FISCAL YEAR ENDING NOVEMBER 30, 1926 AND APPORTIONMENT
REQUESTED FOR 1927

	Apportionment for last fiscal year	Expenditures	Requested Apportionment for new fiscal year
College:			
Personal Services . . .	\$367,300.00	\$391,134.94	\$402,500.00
Maintenance . . .	240,926.28	128,422.50	127,000.00
	\$608,226.28	\$577,923.44	\$529,500.00
Experiment Station:			
Personal Service . . .	\$79,000.00	\$21,044.22	\$75,000.00
Maintenance . . .	19,590.53	17,455.44	19,500.00
	\$98,590.53	\$38,500.27	\$94,500.00
Extension Service:			
Personal Services . . .	\$50,500.00	\$48,934.74	\$51,500.00
Maintenance . . .	33,274.53	24,935.66	25,000.00
	\$83,774.53	\$73,870.40	\$76,500.00
Short Courses:			
Personal Service . . .	\$60,000.00	\$55,649.12	\$62,400.00
Maintenance . . .	12,253.76	10,712.21	12,000.00
	\$72,253.76	\$66,361.33	\$74,400.00
Market Garden Field Station:			
Personal Service . . .	\$7,500.00	\$7,521.97	\$8,000.00
Maintenance . . .	5,005.11	5,019.23	6,000.00
	\$12,505.11	\$12,540.20	\$14,000.00
Trustees travel . . .	\$1,200.00	\$231.10	\$1,200.00
Printing reports . . .	2,000.00	1,225.24	2,000.00
Commercial feedstuffs . . .	10,000.00	8,223.39	10,000.00
	\$13,200.00	\$11,479.73	\$13,200.00
Fertilizer law . . .	\$13,500.00	\$13,430.25	\$13,500.00
Poultry law . . .	10,001.63	9,841.94	10,000.00
Milk testing law . . .	600.00	527.34	600.00
	\$24,101.63	\$23,800.53	\$24,100.00
Replacements . . .	\$17,340.33	\$17,977.25	\$25,000.00
Emergency . . .	5,000.00	1,053.35	5,000.00
	\$22,340.33	\$19,030.60	\$30,000.00
Totals	\$935,702.12	\$898,771.90	\$937,200.00
Balance unexpended		41,989.22	
		<u>\$935,702.12</u>	

CASH STATEMENT

	Other Funds	State Funds	Totals
Balance December 1, 1925	\$40,022.14		\$40,022.14
<i>Receipts.</i>			
College Receipts from Students and others			39,503.99
Tuition		\$16,250.00	
Laboratory fees		6,165.39	
Rent		17,088.60	
Department Sales			80,653.55
Products		70,454.50	
Miscellaneous		10,199.05	

32			P.D. 31.
	Other Funds	State Funds	Totals
Experiment Station			16,502.10
Cranberry receipts		7,580.87	
Chemical receipts		464.36	
Miscellaneous		8,456.87	
Extension Service			1,071.84
Correspondence		873.34	
Miscellaneous		198.50	
Short Courses			7,439.07
Students' fees		7,148.07	
Winter School		290.00	
Miscellaneous		1.00	
Market Garden Field Station			1,086.98
Produce		1,086.98	
Feed Law		18,234.69	18,234.69
Fertilizer Law		14,691.33	14,691.33
Milk Testing Law		1,026.75	1,026.75
Poultry Disease Law		8,740.45	8,740.45
Treasurer of the Commonwealth			719,258.78
Maintenance		695,459.10	
Special Appropriations		18,486.36	
Endowment	3,313.32		
Department of Education	2,000.00		
Federal Government			126,868.08
Land Grant of 1862	7,300.00		
Hatch Fund of 1887	15,000.00		
Morrill Fund of 1890	16,666.67		
Adams Fund of 1906	15,000.00		
Nelson Fund of 1907	16,666.66		
Smith Lever Fund of 1914	31,234.75		
Short Courses, Federal Project			
Purnell Fund of 1925	25,000.00		
Bills paid by State Treasurer		209,725.32	209,725.32
	\$172,203.54	\$1,112,621.53	\$1,284,825.07

Payments.

	Other Funds	State Funds	Totals
College expense			\$623,570.09
Personal Service	\$45,946.65	\$391,134.94	
Maintenance		186,488.50	
Experiment Station			150,571.51
Personal Service	48,096.08	81,044.83	
Maintenance	3,975.16	17,455.44	
Extension Service			114,800.50
Personal Service	28,555.38	48,934.74	
Maintenance	2,374.72	34,935.66	
Short Courses			66,737.43
Personal Service	220.83	55,649.12	
Maintenance	148.67	10,718.81	
Market Garden Field Station			
Personal Service		7,521.07	12,540.30
Maintenance		5,019.23	
Trustees Travel		831.10	831.10
Printing Reports		1,225.24	1,225.24
Replacements		17,977.85	17,977.85
Commercial Feedstuffs		9,823.39	9,823.39
Fertilizer Law		13,430.25	13,430.25
Milk Testing Law		587.34	587.34
Poultry Disease Law		9,941.04	9,941.04

	Other Funds	State Funds	Totals
Special Appropriations			24,425.86
1925 Emergency needs		669.36	
1925 Livestock replacement		1,804.83	
1926 Emergency needs		1,053.35	
1926 Foreman's Quarters Tillson Farm		6,000.00	
1926 Repairs to Physics Building		4,000.00	
1926 Brooder House		1,800.00	
1926 Certain Barns		9,098.32	
Income		188,950.75	188,950.75
Refunds to State Treasurer		6,526.37	6,526.37
Balance	42,886.05		42,886.05
	<u>\$172,203.54</u>	<u>\$1,112,621.53</u>	<u>\$1,284,825.07</u>

BUDGET APPROPRIATION FOR CURRENT EXPENSES FOR YEAR ENDING
Nov. 30, 1926

Personal Services:	Appropriation	Current Year	Balances
Administration	\$35,300.00	\$33,387.02	\$1,912.98
Instruction	203,000.00	197,650.67	5,349.33
Maintenance	129,000.00		—15,615.77
Departmental		74,544.96	
Farm		29,693.19	
Operating		40,377.62	
Repairs Ordinary		15,481.48	—15,481.48
Replacements		1,794.49	—1,794.49
Experiment Station	79,000.00	81,044.83	—2,044.83
Fertilizer Control Law		10,384.11	—10,384.11
Poultry Disease Law		6,649.89	—6,649.89
Milk Testing Inspection Law		360.00	—360.00
Commercial Feedstuffs		7,387.95	—7,387.95
Extension Service	50,500.00	48,934.74	1,565.26
Market Garden Field Station	7,500.00	7,521.07	—21.07
Short Courses	60,600.00	55,649.12	4,950.88
Total Personal Services	<u>\$564,900.00</u>	<u>\$610,861.14</u>	<u>\$—45,961.14</u>
Travel	\$42,589.11	\$6,268.26	\$4,856.23
Office and other Expenses		31,464.62	
Teaching and Laboratory Supplies	56,349.46	44,924.18	3,283.15
Minor Equipment		8,142.13	
Experiment Station:			
Supplies and Equipment	15,589.75	13,678.46	1,911.29
Travel	4,000.78	2,504.80	223.80
Office Expenses		1,272.18	
Extension Services:			
Supplies and Equipment	33,274.53	15,354.67	—1,661.13
Travel		19,580.99	
Market Garden Field Station	5,005.11	5,019.23	—14.12
Short Courses:			
Travel	12,253.76	1,241.90	1,534.95
Office and other Expenses		9,476.91	
Heat, Light and Power	94,699.88	66,583.39	28,116.49
Farm	22,198.66	14,785.31	7,413.35
Repairs Ordinary	25,099.72	14,320.61	10,779.11
Replacements	17,340.33	16,183.36	1,156.97
Fertilizer Control Law:			
Travel	13,500.00	1,116.16	10,453.86
Office and other Expenses		1,929.98	

	Appropriation	Current Year	P.D. 31. Balance
Poultry Disease Law:			
Travel	10,001.63	1,522.60	6,710.48
Office and other Expenses		1,768.55	
Milk Testing Inspection Law			
Travel	600.00	224.18	372.66
Office and other Expenses		3.16	
Trustee's Expenses	1,200.00	831.10	368.90
Printing Reports	2,099.40	1,225.24	874.16
Commercial Feedstuffs			
Travel	10,000.00	689.37	7,564.56
Office and other Expenses		1,746.07	
Total	\$930,702.12	\$892,718.55	\$37,983.57

	Appropriation	Current Year	Balance
College Dept.:			
Dean's Office	\$7,420.26	\$7,256.13	\$164.13
Executive Order	7,742.79	8,911.32	—1,168.53
President's Office	19,214.71	19,158.69	56.02
Registrar's Office	2,940.00	2,935.81	4.19
Treasurer's Office	18,915.18	18,888.09	27.09
Agricultural Economics	9,332.03	9,331.81	.22
Agricultural Education	6,416.81	6,308.71	108.10
Agronomy	7,507.25	7,557.96	—50.71
Animal Husbandry	3,270.00	3,561.52	—291.52
Beekeeping	2,525.00	2,504.78	20.22
Botany	12,144.18	12,242.82	—98.64
Chemistry	18,915.58	18,909.03	6.55
Dairying	37,092.65	37,978.47	—885.82
Economics and Sociology	4,215.01	4,130.76	84.25
Entomology	9,276.00	9,212.53	63.47
Farm	47,987.22	48,267.13	—279.91
Farm Management	5,814.75	5,722.26	92.49
Floriculture	11,621.67	11,586.62	35.05
Forestry	2,772.43	2,716.37	56.06
Freshman Agriculture	200.00	90.44	109.56
General Agriculture	4,795.00	5,010.96	—215.96
General Expense	166.07	2,625.94	—2,459.87
General Horticulture	18,271.51	17,493.98	777.53
Graduate School	200.00	60.30	139.70
Grounds	10,317.74	10,474.36	—156.62
Horticultural Mfg.	7,480.72	7,088.12	392.60
Hospital	4,000.00	4,533.94	—533.94
Landscape Gardening	6,917.00	6,941.41	—24.41
Language and Literature	18,396.28	18,288.94	107.34
Library	17,137.86	17,708.05	—570.19
Mathematics	7,915.00	7,841.05	73.95
Microbiology	10,351.00	10,264.67	86.33
Military Science	2,779.73	2,778.13	1.60
Mount Toby	2,504.90	2,477.24	27.66
Physical Education	12,635.00	12,772.14	—137.14
Physics	5,490.00	5,502.53	—12.53
Operating and Maintenance	172,156.33	144,761.31	27,395.02
Pomology	12,020.00	12,158.05	—138.05
Poultry	25,024.46	25,410.79	—386.33
Rural Engineering	5,207.50	5,183.19	24.31
Rural Home Life	10,719.38	10,584.34	135.04
Rural Sociology	775.00	691.70	83.30
Vegetable Gardening	7,181.61	6,843.13	338.48
Veterinary	10,667.50	10,690.65	—23.15
Women's Dormitory	3,634.60	3,988.87	—354.27

	Appropriation	Current Year	Balance
Zoology and Geology	4,120.00	4,140.25	—20.25
Salary Surplus	7,262.31		7,262.31
Replacement Surplus	68.83		68.83
Total College Expenses	\$623,518.85	\$593,585.29	\$29,933.56
Experiment Station Dept.:			
Administration	\$10,503.13	\$10,448.81	\$54.32
Agric. Economics	100.00	106.17	—6.17
Agric. Engineering	100.00	92.53	7.47
Agronomy	6,633.22	6,695.38	—62.16
Botany	11,067.50	11,112.04	—44.54
Chemistry	12,407.27	12,546.10	—138.83
Cranberry	9,365.30	9,265.68	99.62
Entomology	7,831.34	7,647.63	183.71
Farm Management	—	—	—
Freight and Express	300.00	223.44	76.56
Library	700.00	561.70	138.30
Market Garden Field Station	2,745.00	2,745.00	
Meteorology	1,100.00	1,088.40	11.60
Microbiology	2,585.33	2,582.52	2.81
Pomology	6,860.02	7,028.28	—168.26
Poultry	9,839.95	9,974.23	—134.28
Station Service	12,983.29	12,721.12	262.17
Veterinary Science	4,515.00	4,436.62	78.38
Fertilizer Control Law	13,500.00	13,430.25	69.75
Poultry Disease Law	10,001.63	9,941.04	60.59
Milk Testing Inspection Law	600.00	587.34	12.66
Commercial Feedstuffs	10,000.00	9,823.39	176.61
Salary Surplus	—287.51		—287.51
General Horticulture	150.00	103.82	46.18
Total Experiment Station	\$133,600.47	\$133,161.49	\$438.98
Extension Service Dept.:			
Administration	\$17,611.71	\$19,162.66	—\$1,550.95
Animal Husbandry	1,852.00	2,044.39	—192.39
Animal Pathology	150.00		150.00
Clothing	3,136.00	1,915.24	1,220.76
Co-op. Marketing	3,575.00	74.52	3,500.48
Correspondence Courses	3,410.27	3,413.59	—3.32
County Agents	2,812.93	3,103.12	—290.19
Crop Protection	100.00	12.50	87.50
Dairying	1,550.00	1,566.41	—16.41
Exhibits	1,930.00	1,998.93	—68.93
Extension Courses At College	4,190.00	4,925.81	—735.81
Extension Schools	250.00	1.23	248.72
Farm Management	2,342.00	1,842.47	499.53
Forestry	75.00	60.00	15.00
Gardening	2,462.00	5,076.38	—2,614.38
Home Demonstrations	2,913.30	3,924.30	—1,011.00
Horticultural Mfg.	3,751.75	3,021.38	730.37
Household Management	800.00	598.45	201.55
Junior Extension	11,409.82	13,773.95	—2,364.13
Landscape Gardening	325.00	207.30	117.70
Lectures	200.00	41.47	158.53
Library Extension	125.00		125.00
Nutrition	2,998.50	2,658.17	340.33
Pomology	2,972.00	3,141.68	—169.68
Poultry Husbandry	3,702.70	3,069.08	633.62

	Appropriation	Current Year	Balances
Printing	6,829.05	5,934.42	894.63
Rural Engineering	175.00	75.83	99.17
Soils and Crops	2,775.50	2,864.07	—88.57
	<u>\$84,424.53</u>	<u>\$84,507.40</u>	<u>\$—82.87</u>
Miscellaneous:			
Short Courses			
Agricultural Economics	\$505.38	\$481.38	\$24.00
Agronomy	3,735.35	3,586.92	148.43
Animal Husbandry	3,300.00	3,200.00	100.00
Dairying	5,620.00	5,774.91	—154.91
Entomology	100.00	93.94	6.06
Farm Management	1,085.40	1,077.07	8.33
Floriculture	2,970.15	2,976.72	6.57
Forestry	25.00	21.64	3.36
General Horticulture	2,230.87	2,219.71	11.16
Home Economics	1,589.28	1,494.86	94.42
Horticultural Mfg.	699.33	298.11	401.22
Library	100.00	77.28	22.72
Microbiology	50.00	42.62	7.38
Office	24,478.78	24,098.48	380.30
Physical Education	1,990.00	1,970.49	19.51
Pomology	8,327.85	7,979.05	348.80
Poultry	2,635.00	2,635.00	
Rural Engineering	5,680.41	5,639.59	40.82
Treasurer's Office	200.00	159.12	40.88
Vegetable Gardening	2,580.08	2,541.04	39.04
Salary Surplus	4,950.88		4,950.88
Total Short Courses	<u>\$72,853.76</u>	<u>\$66,357.93</u>	<u>\$6,485.83</u>
Market Garden Field Station	\$13,005.11	\$13,040.10	\$—34.99
Trustee's Expenses	1,200.00	831.10	368.90
Printing Reports	2,099.40	1,225.24	874.16
	<u>\$930,702.12</u>	<u>\$892,718.55</u>	<u>\$37,983.57</u>

Special Appropriations.

	Appropriations	Expenditures to date	Balances
1925 Emergency Fund	\$669.36	\$669.36	
1925 Livestock Replacement	1,804.84	1,804.83	\$.01
1926 Emergency Fund	5,000.00	1,053.35	3,946.65
1926 Foreman's Quarters Tillson	6,000.00	6,000.00	
1926 Repairs to Physics Bldg.	4,000.00	4,000.00	
1926 Brooder House	1,800.00	1,800.00	
1926 Certain Barns	11,200.00	9,098.32	2,101.68
Total Special Appropriations	<u>\$30,474.20</u>	<u>\$24,425.86</u>	<u>\$6,048.34</u>

COLLEGE BUILDINGS (ESTIMATED VALUE 1926)

	Inventory at beginning of year.	Per Cent. deducted.	Value at beginning of year less deterioration.	Repairs and Improve- ments dur- ing year.	Total value at close of fiscal year.
Adams Hall	122,584.47	2	120,132.78	361.99	120,494.77
Apiary	2,856.18	2	2,799.06	6.10	2,805.16
Cashier's House	2,328.42	5	2,212.00	245.90	2,457.90
Chemistry Store House	47.59	2	46.64		46.64
Clark Hall	58,912.95	2	57,734.69	1,687.12	59,421.81
Cold Storage Laboratory	9,786.77	2	9,591.03	23.48	9,614.51
Dairy Barns and Storage	28,968.72	3	28,099.66	392.69	28,492.35
Draper Hall	74,164.79	3	71,930.15	2,111.28	74,041.43
Drill Hall and Gun Shed	8,737.41	5	8,300.54	686.25	8,986.79
Durfee Glass House, old	6,745.24	5	6,407.98	38.37	6,446.35
Durfee Glass House, new	9,700.05	5	9,215.05	5.41	9,220.46
Farm Blacksmith Shop	393.42	3	381.62		381.62
Farm Bungalow No. 1	2,439.34	3	2,366.16	49.42	2,415.58
Farm Bungalow No. 2	4,221.86	3	4,095.20	71.73	4,166.93
Farm Bungalow No. 3	4,081.78	3	3,959.33	124.45	4,083.78
Farm House No. 1	3,208.35	3	3,112.10	178.82	3,290.92
Farm Bull Pens and Fence	4,171.85	5	3,963.26		3,963.26
Fernald Hall	68,250.64	2	66,885.63	603.73	67,489.36
Flint Laboratory	70,073.86	2	68,672.38	618.28	69,290.66
French Hall	45,357.30	2	44,450.15	202.50	44,652.65
Goessmann Laboratory	283,593.56	2	277,821.69	1,433.91	279,355.60
Grinnell Arena	8,395.43	2	8,227.52	298.37	8,525.89
Ground Tool Shed	171.09	5	162.54		162.54
Harlow House	1,921.59	5	1,825.51	.60	1,826.11
Horse Barn	4,465.79	3	4,331.82	127.85	4,459.67
Head Division of Horticul- ture	2,952.86	5	2,805.22	50.69	2,855.91
Horticultural Barn	3,782.78	3	3,669.30	40.08	3,709.38
Horticultural Garage	1,443.40	3	1,400.10		1,400.10
Horticultural Tool Shed	5,002.60	3	4,902.52	.65	4,903.17
Horticultural Open Shed	401.41	5	381.34		381.34
Horticultural Manufac- tures Shed	2,952.42	5	2,804.80	3.52	2,808.32
Hospital	15,702.56	2	15,398.51	331.06	15,729.57
Jewett House and Barn	3,086.16	5	2,931.85	28.97	2,960.82
Machinery Barn	3,389.75	3	3,288.06	232.14	3,520.20
Market Garden Field Greenhouse	14,000.00	2	13,720.00		13,720.00
Market Garden Field Sta- tion Office and Labora- tory Building	8,000.00	2	7,840.00		7,840.00
Market Garden Field Sta- tion Farmhouse	5,700.00	5	5,415.00		5,415.00
Market Garden Field Sta- tion Ice House	95.00	5	90.25		90.25
Market Garden Field Sta- tion Large Cow Barn	8,550.00	5	8,122.50		8,122.50
Market Garden Field Sta- tion Small Stock Barn	1,900.00	5	1,805.00		1,805.00
Market Garden Field Sta- tion Small Shed	760.00	5	714.00		714.00
Mathematical Building	4,804.42	5	4,564.20	57.86	4,622.06
Memorial Hall	98,718.68	2	96,744.31	642.66	97,386.97
Microbiology Building	54,452.73	2	53,363.68	469.10	53,832.78
Military Storage	174.58	5	165.85		165.85
Mount Toby House and Barn	3,126.20	5	2,969.89		2,969.89
North Dormitory	28,996.10	2	28,416.18	371.89	28,788.07
Paige Laboratory and Sta- ble	23,143.10	2	22,680.24	283.23	22,963.47
Physics Laboratory	4,638.80	5	4,406.86	4,930.51	9,337.37
Piggery	2,641.88	3	2,562.62	5.94	2,568.56
Poultry Departments					
No. 1 Demonstration Building	1,963.53	2	1,929.16	13.16	1,942.32
No. 2 Oil House	150.37	2	147.36		147.36
No. 3 Brooder, killing and fattening laboratory	2,204.16	2	2,160.08	639.92	2,800.00
No. 4 Mechanics, stor- age building and incubator cellar.	3,995.89	2	3,915.97	.93	3,916.90
No. 5 Laying House	1,680.96	2	1,647.34		1,647.34
No. 6 Manure Shed	132.69	2	130.04		130.04
No. 7 Small henhouse	41.29	2	40.46		40.46
No. 8 Breeding House	1,405.62	2	1,377.51		1,377.51
No. 9 Experimental Breeding House	607.16	2	595.02		595.02
No. 10 Duck House	85.74	2	84.03		84.03
No. 11 Unit house for 200 hens	430.46	2	421.85		421.85

COLLEGE BUILDINGS (ESTIMATED VALUE, 1926)—Concluded.

	Inventory at beginning of year.	Per Cent. deducted.	Value at beginning of year less deterioration.	Repairs and improve- ments dur- ing year.	Total value at close of fiscal year.
No. 12 Unit house for 100 hens	392.69	2	384.84		384.84
Power Plant and Storage buildings including coal pocket	48,308.42	2	47,342.25	311.21	47,653.46
President's House	13,591.84	3	13,184.08	778.65	13,962.73
Rural Engineering Build- ing	14,501.50	2	14,211.47	59.39	14,270.86
Sheep Barn	1,489.54	3	1,444.85	76.56	1,521.41
South Dormitory	42,227.26	2	41,382.71	1,635.14	43,017.85
Stockbridge Hall	157,632.94	2	154,480.28	511.61	154,991.89
Agronomy Greenhouse and Storage	4,662.43	2	4,569.18	128.91	4,698.09
Stockbridge House	2,055.46	5	1,952.69	40.26	1,992.95
Stone Chapel	28,907.74	2	28,329.59	266.77	28,596.36
Turbine House	17,013.92	2	16,673.64	19.31	16,692.95
Vegetable Plant House	5,019.69	5	4,768.71	41.78	4,810.49
Waiting Station	534.04	2	523.36	172.14	695.50
Wilder Hall	31,480.14	2	30,850.54	81.53	30,932.07
Young Stock Barns, in- cluding isolation and Quarantine Barns	6,276.20	3	6,087.91	11,258.82	17,346.73
Stable for Cavalry Unit				228.39	13,223.39
Blacksmith Shop					700.00
Storage Barn					2,800.00
	1,511,314.60		1,476,621.69	32,986.08	1,526,107.72

EXPERIMENT STATION BUILDINGS (ESTIMATED VALUE)

	Inventory at beginning of year	Per Cent. deducted.	Cost at beginning of year less per cent. deterioration.	Repairs and improve- ments during year.	Total value at close of year.
Agricultural laboratory	14,064.17	2	13,782.89	73.72	13,856.61
Agricultural barn	4,851.72	3	4,706.17	1,565.36	6,271.53
Agricultural farmhouse	1,851.76	3	1,796.21	48.52	1,844.73
Agricultural glasshouse	1,051.33	5	993.76	5.02	1,003.78
Brooks house	2,772.59	5	2,633.96	96.22	2,730.18
Brooks barn and sheds	1,288.69	5	1,224.26		1,224.26
Brooks tobacco barn	2,850.00	5	2,707.50		2,707.50
Cranberry buildings	2,508.84	5	2,383.40	5,564.11	7,947.51
Entomological glasshouses	527.97	5	501.57		501.57
Plant and Animal chemis- try laboratory	26,767.25	2	26,231.90	349.58	26,581.48
Plant and Animal Chemis- try barns	6,143.06	3	5,958.77	301.96	6,260.73
Plant and Animal dairy	1,705.24	3	1,654.08		1,654.08
Six poultry houses	674.97	2	661.47		661.47
Tillson Cottage	1,052.47	5	999.85	14.04	1,013.89
Tillson Barn	991.42	5	941.85		941.85
Tillson poultry houses (4) Nos. 2, 3, 4, 5	2,837.06	2	2,780.32		2,780.32
Tillson Foreman's Quar- ters and Incubator cel- lar No. 1	692.06	2	678.22	6,163.54	6,846.76
Tillson summer sheds (3) No. 6	418.11	5	397.20		397.20
Tillson pullet brooder No. 7	1,065.82	5	1,012.53		1,012.53
Tillson hen brooder No. 8	1,112.98	5	1,057.33		1,057.33
	75,227.51		73,108.24	14,187.07	87,295.31

MASSACHUSETTS AGRICULTURAL COLLEGE

COLLEGE EQUIPMENT (ESTIMATED VALUE)

Administrative division:

Dean's Office	\$1,325.00
President's Office	3,325.73
Registrar's Office	1,181.39
Treasurer's Office	5,264.15

Agricultural division:

Agricultural Engineering	9,765.29
Agronomy	9,362.77
Animal Husbandry	770.22
Dairy	24,454.15
Farm	26,043.25
Farm Livestock	47,475.00
Farm Management	1,056.03
General Agriculture	2,214.48
Poultry	10,766.40
Domestic Science	4,419.98
Dining Hall	39,706.01
Extension	15,133.41

General Science:

Apiary	2,038.65
Botanical	26,540.05
Chemistry	31,589.50
Entomology	6,390.70
Mathematics	2,349.00
Microbiology	7,435.95
Physics	9,553.98
Veterinary	13,768.87
Zoology and Geology	17,705.45
Graduate School	162.60

Horticultural division:

Floriculture	32,482.51
Forestry	944.05
General Horticulture	8,503.30
Grounds	2,732.80
Horticultural Manufactures	6,288.70
Landscape Gardening	7,055.60
Market Garden Field Station	4,699.84
Mount Toby Reservation	617.30
Pomology	7,593.45
Vegetable Garden	4,303.37
Hospital	902.25

Humanities Division:

Economics and Sociology	43.23
Language and Literature	703.00
Library	148,819.24
Military	2,011.71

Operating and Maintenance:

College Supply	\$768.50
Fire Apparatus	1,483.89
General Maintenance:	
Office	744.75
Carpentry and Masonry Supplies	3,956.46
Carpentry and Masonry Tools	5,624.41
Electrical Supplies	3,147.29
Electrical Tools	204.05
Electrical Commencement Supplies	533.00
Heating and Plumbing Supplies	8,723.63
Heating and Plumbing Tools	2,540.37
Painting Supplies	911.08
Painting Tools	254.00
Steam Main	6,508.66
Lighting Lines	10,394.01
Janitor's Supplies	1,628.98
Sewer Line	13,101.65
Water Mains	12,717.22

Power Plant:

General Equipment	92,579.53
Tools	201.80
Supplies	212.45
Fuel	12,150.44
Physical Education	1,672.58
Rural Social Science:	
Agricultural Economics	2,066.43
Agricultural Education	1,824.78
Rural Sociology	209.02
Short Course	2,779.21
Textbooks	2,895.40
Trophy Room	699.75
Women's Dormitory	10,096.39
Memorial Hall	14,523.50
Freshman Agriculture	240.60
Total	\$762,892.19

EXPERIMENT STATION EQUIPMENT (ESTIMATED VALUE)

Agronomy	\$487.76
Apiary	102.45
Agricultural Economics Department	950.05
Agricultural Laboratory	10,145.39
Botany	9,158.13
Cranberry Station	5,759.49
Director's Office	5,349.68
Entomological laboratory	24,927.16
Entomology at Market-Garden Field Station	299.41
Fertilizer and Feed Control	15,118.62
P. and A. Chemistry	18,954.08
Meteorological Observatory	636.00
Microbiological laboratory	4,195.20
Pomology	4,258.84
Poultry Department	6,236.00
Treasurer's Office	861.50
Veterinary	4,189.84
	\$111,629.60

INVENTORY—REAL ESTATE

Land (Estimated Value)

Angus Land	\$800.00
Allen Place	500.00
Baker Place	2,500.00
Bangs Place	2,350.00
Brooks Farm	11,000.00
Brown Land	500.00
Charmbury Place	450.00
Clark Place	4,500.00
College Farm	37,000.00
Cranberry Land	15,500.00
George Cutler Jr., Trustee	2,700.00
Dickinson Land	7,850.00
Harlow Farm and Orchard	3,284.63
Hawley and Brown Place	675.00
Kellogg Place	3,368.45
Loomis Place	415.00
Louisa Baker Place	5,000.00
Market-Garden Field Station	21,000.00

P. D. 31.	41
Mount Toby demonstration forest	30,000.00
Newell Farm	2,800.00
Old Creamery Place	1,000.00
Owen Farm	5,000.00
Pelham Quarry	500.00
Tillson Farm	2,950.00
Westcott Place	2,250.00
	\$163,893.08

	Acres.
College estate (area)	702.19
Cranberry Station, Wareham (area)	23.67
Market-Garden Field Station Waltham (area)	55.39
Mount Toby demonstration forest (area)	755.27
Rifle range	46.20
Pelham quarry	.50
Total acreage	1,583.22

SUMMARY

Land	\$163,893.08
College buildings	1,526,107.72
College equipment	762,892.19
Experiment Station buildings	87,295.31
Experiment Station equipment	111,629.60
Total	\$2,651,817.90

DINING HALL STATEMENT NOVEMBER 30, 1926

Balance December 1, 1925	\$13,141.56	
Total Disbursements	132,556.83	
Outstanding bills November 30, 1926	5,489.52	
Total collections		\$136,149.48
Outstanding accounts: Nov. 30, 1926:		
Board		1,507.63
Special Service, etc.		181.10
Inventory, November 30, 1926		10,260.08
Balance		3,089.62
	\$151,187.91	\$151,187.91

BURNHAM EMERGENCY FUND

	Market Value Dec. 1, 1926	Par Value	Income
Two bonds American Telephone & Telegraph Co. 4s @ 98.	\$1,960.00	\$2,000.00	\$80.00
Two bonds Power Corporation of N. Y. 6½s @ 105	2,100.00	2,000.00	180.00
One United States Liberty Bond 4½s	510.00	500.00	21.25
One bond Jersey Central Power and Light Co. 5½s.	990.00	500.00	
	\$5,560.00	\$5,000.00	\$231.25
Unexpended balance Dec. 1, 1925	—	—	252.40
Ohio Service Company	—	—	15.00
Earnings from exchange of bonds	—	—	28.28
	—	—	\$526.93
Disbursements for fiscal year ending November 30, 1926	—	—	470.13
Cash on hand November 30, 1926			\$56.80

LIBRARY FUND

	Market Value Dec. 1, 1926	Par Value	Income
Five bonds New York Central and Hudson River R. R. Co. 4s @ 96	\$4,800.00	\$5,000.00	\$200.00
Five bonds Lake Shore & Michigan Southern Railroad Co. 4s @ 99	4,950.00	5,000.00	200.00
Two shares New York Central Railroad stock @ 134	268.00	200.00	14.00
Amherst Savings Bank deposit	175.52	175.52	7.95
	\$10,193.52	\$10,375.52	\$421.95
Disbursements for fiscal year ending Nov. 30, 1926			
	-	-	421.95

SPECIAL FUNDS

Endowed Labor Fund (the Gift of a Friend of the College)

Two bonds American Telephone & Telegraph Co. 4s @ 98	\$1,960.00	\$2,000.00	\$80.00
Two bonds Lake Shore & Michigan Southern Railroad Co. 4s @ 99	1,980.00	2,000.00	80.00
One bond New York Central & Hudson River R. R. Co. 4s @ 96	960.00	1,000.00	40.00
One bond Indiana Hydro Electric Co. 6s @ 103	1,030.00	1,000.00	60.00
One bond Jersey Central Power & Light Co. 5½s	990.00	1,000.00	
Amherst Savings Bank deposit	1,143.39	1,143.39	52.00
	\$8,063.39	\$8,143.39	\$312.00
Unexpended balance Dec. 1, 1925	-	-	126.21
Ohio Service Company	-	-	30.00
Earnings from exchange of bonds	-	-	56.56
	-	-	\$524.77
Disbursements for fiscal year ending Nov. 30, 1926			
	-	-	73.65
Cash on hand November 30, 1926			
	-	-	\$451.12

Whiting Street Scholarship Fund

One bond New York Central & Hudson River R. R. Co. 4s.	\$960.00	\$1,000.00	\$40.00
Amherst Savings Bank deposit	771.64	771.64	35.07
	\$1,731.64	\$1,771.64	\$75.07
Unexpended balance Dec. 1, 1925			
	-	-	221.98
	-	-	\$297.05
Disbursements for fiscal year ending November 30, 1926			
	-	-	180.00
Cash on hand November 30, 1926			
	-	-	\$117.05

Hills Fund

One United States Liberty Bond 4¼s	\$1,020.00	\$1,000.00	\$42.50
One bond American Telephone & Telegraph Co. 4s	980.00	1,000.00	40.00
One bond New York Central & Hudson River R. R. Co. 4s	960.00	1,000.00	40.00
One bond New York Central R. R. debenture 4s	900.00	1,000.00	40.00
Three bonds Pacific Telephone & Telegraph Co. 5s @ 102	3,060.00	3,000.00	150.00
Boston & Albany R. R. stock 3 5/8 shares @ 172	623.50	362.00	31.68
Amherst Savings Bank deposit	2,572.75	2,572.75	117.04
Electric Securities Co. bonds 1 9/50 bonds @ 97	1,144.60	1,180.00	59.00
One bond Great Western Light & Power Co. 5½s	1,000.00	1,000.00	55.00
One bond American Gas & Electric Co. 6s	1,020.00	1,000.00	60.00
One bond Potomac Edison Co. 6½s	\$1,050.00	\$1,000.00	\$65.00
One bond Oklahoma Gas & Electric Co. 6s	980.00	1,000.00	30.00
	\$15,310.85	\$15,114.75	\$730.22
Unexpended balance Dec. 1, 1925	-	-	469.16
Penn Public Service Corp	-	-	30.00
Earnings from exchange of bonds	-	-	54.92
	-	-	\$1,274.30
Disbursements for fiscal year ending Nov. 30, 1926			
	-	-	842.50
Cash on hand Nov. 30, 1926			
	-	-	\$431.80

Mary Robinson Fund

Amherst Savings Bank deposit	\$142.00	\$142.00	\$6.45
Boston & Albany R. R. stock 3/8 shares @ 172	64.50	38.00	3.32
Electric Securities Co. 41/50 bonds @ 97	795.40	820.00	41.00
	\$1,001.90	\$1,000.00	\$50.77
Unexpended balance Dec. 1, 1925			
	-	-	291.92
Cash on hand November 30, 1926			
	-	-	\$342.69

Grinnell Prize Fund

	Market Value Dec. 1, 1926	Par Value	Income
Ten shares New York Central stock @ 134	\$1,340.00	\$1,000.00	\$70.00
Unexpended balance Dec. 1, 1925	—	—	322.64
Disbursements for prizes	\$1,340.00	\$1,000.00	\$392.64
	—	—	50.00
Cash on hand November 30, 1926	—	—	\$342.64

Gassett Scholarship

One bond New York Central & Hudson River Railroad Company 4s	\$960.00	\$1,000.00	\$40.00
Amherst Savings Bank deposit	511.64	511.64	23.23
Unexpended balance December 1, 1925	\$1,471.64	\$1,511.64	\$63.23
	—	—	56.59
Cash on hand November 30, 1926	—	—	\$119.82

Massachusetts Agricultural College (Investment)

One share New York Central Railroad stock \$134	\$134.00	\$100.00	\$7.00
Unexpended balance December 1, 1925	—	—	133.14
Cash on hand November 30, 1926	—	—	\$140.14

Danforth Keyes Bangs Fund

Two bonds Pacific Telephone & Telegraph Company 5s at \$102	\$2,040.00	\$2,000.00	\$100.00
Two bonds Union Electric Light & Power Company 5s at \$100.00	2,000.00	2,000.00	100.00
Two bonds American Telephone & Telegraph Company 4s at \$98	1,960.00	2,000.00	80.00
One bond Indiana Hydro Electric Power Company 6s	1,030.00	1,000.00	60.00
Interest from Student Loans	—	—	136.81
Unexpended balance December 1, 1925	\$7,030.00	\$7,000.00	\$476.81
	—	—	1,739.62
Total loans made to Students during fiscal year 4239.50	—	—	\$2,216.43
Cash received on account of student loans	3955.25	—	—
Excess of loans made over accounts paid by students	—	—	234.25
Cash on hand November 30, 1926	—	—	\$1,932.18

John C. Cutter Fund

One bond Pacific Telephone & Telegraph Company 5s	\$1,020.00	\$1,000.00	\$50.00
Unexpended balance December 1, 1925	—	—	117.36
Disbursements for fiscal year ending November 30, 1926	\$1,020.00	\$1,000.00	\$167.36
	—	—	34.83
Cash on hand November 30, 1926	—	—	\$132.53

William R. Sessions Fund

Five shares New York Central Railroad stock at \$134	\$670.00	\$500.00	\$35.00
Three United States Liberty bonds two at \$1,000.00 one at \$500.00 4¼s at \$102	2,550.00	2,500.00	106.25
One bond Adirondack Light & Power Company 6s	1,060.00	1,000.00	60.00
One bond Southern Illinois Light & Power Company 6s	1,030.00	1,000.00	60.00
Unexpended balance December 1, 1925	\$5,310.00	\$5,000.00	\$261.25
	—	—	71.41
Disbursements for fiscal year ending November 30, 1926	—	—	\$332.66
	—	—	100.00
Cash on hand November 30, 1926	—	—	\$232.66

Alvord Dairy Scholarship Fund

	Market Value Dec. 1, 1926	Par Value	Income
One United States Liberty Bond 4½s	\$1,020.00	\$1,000.00	\$42.50
One bond Jersey Central Light & Power Company 5½	990.00	1,000.00	—
Two bonds Great Western Power Company 5½s at \$100	2,000.00	2,000.00	110.00
Amherst Savings Bank deposit	1,000.00	1,000.00	45.51
	\$5,010.00	\$5,000.00	\$198.01
Unexpended balance December 1, 1925	—	—	214.36
	—	—	\$412.37
Southern Illinois Light & Power	—	—	70.00
Earnings from exchange of bonds	—	—	102.19
	—	—	\$584.56
Disbursements for fiscal year ending November 30, 1926	—	—	396.00
Cash on hand November 30, 1926	—	—	\$188.56

J. W. D. French Fund

Two bonds Southern Illinois Light and Power Company 6s at \$103	\$2,060.00	\$2,000.00	\$120.00
Two bonds Great Western Light & Power Company 5½s at \$100	2,000.00	2,000.00	110.00
Two bonds Jersey Central Power & Light Company 5½s at \$99	1,980.00	2,000.00	—
Four bonds Oklahoma Gas & Electric Company 6s at \$98	3,920.00	4,000.00	120.00
Amherst Savings Bank deposit	500.00	500.0	22.75
	\$10,460.00	\$10,500.00	\$372.75
Unexpended balance December 1, 1925	—	—	297.92
Penn Public Service Corporation	—	—	125.00
Ohio Service Company	—	—	60.00
Earnings from exchange of bonds	—	—	332.80
	—	—	\$1,188.47
Disbursements for fiscal year ending November 30, 1926	—	—	450.00
Cash on hand November 30, 1926	—	—	\$738.47

F. G. Crane Fund

Five bonds Jersey Central Power and Light Company 5½s at \$99	\$4,950.00	\$5,000.00	—
Two bonds Power Corporation of New York 6½s at \$105	2,100.00	2,000.00	130.00
Four bonds Potomac Edison Company 6½s at \$105	4,200.00	4,000.00	260.00
Four bonds Northern New York Utilities 6s at \$105	4,200.00	4,000.00	240.00
Five bonds Western Power Corporation 6½s at \$105	5,250.00	5,000.00	162.50
Five bonds Illinois Power & Light Corporation 6s at \$103	5,150.00	5,000.00	300.00
Amherst Savings Bank	250.00	250.00	11.35
	\$26,100.00	\$25,250.00	\$1,103.85
Unexpended balance December 1, 1925	—	—	1,157.55
Penn Public Service Corporation	—	—	162.50
Ohio Service Company	—	—	150.00
Earnings from exchange of bonds	—	—	335.61
	—	—	\$2,909.51
Cancelled notes and cash scholarships	—	—	1,653.32
	—	—	\$1,256.19

Students' Loan Fund of the Massachusetts Agricultural Club

First National Bank	\$500.00	\$500.00	—
Total loans to students		\$500.00	—
	—	—	\$16.36
Unexpended balance Dec. 1, 1925	—	—	22.50
Interest from loans	—	—	—
	—	—	\$38.86
Cash on hand November 30, 1926	—	—	—

SUMMARY OF BALANCE ON HAND OF THE INCOME FROM FUNDS HELD
IN TRUST BY THE M. A. C.

Burnham Emergency Fund	\$56.80
Library Fund	—
Endowed Labor Fund	451.12
Whiting Street scholarship Fund	117.05
Hills Fund	431.80
Mary Robinson Fund	342.69
Grinnell Prize Fund	342.64

P. D. 31.	45
Gassett scholarship	119.82
Massachusetts Agricultural College Investment Fund	140.14
Danforth Keyes Bangs Fund	1,932.18
John C. Cutter Fund	132.53
William R. Sessions Fund	232.66
Alvord Dairy Scholarship Fund	188.56
J. D. W. French Fund	738.47
F. G. Crane Fund	1,256.19
Massachusetts Agricultural Club Fund	38.86
	\$6,521.51

I hereby certify that I have this day examined the Massachusetts Agricultural College Account, as reported by the Treasurer, Fred C. Kenney, for the year ending November 30th, 1926. All bonds and investments are as represented in the Treasurer's Report. All disbursements are properly vouched for, and all cash balances are found to be correct.

FRANK GERRETT,
Auditor.

HISTORY OF SPECIAL FUNDS.

Burnham Emergency Fund.—A bequest of \$5,000 from T. O. H. P. Burnham of Boston made without any conditions. The Trustees of the College have used this fund in any cases of emergency where funds were not available. At present the fund is intact and the income only has been used for such emergency matters as the Trustees have authorized. The fund now shows an investment of \$5,000.00.

Library Fund.—The library of the college at the present time contains 77,000 volumes. The income from the fund raised by the alumni and others is devoted to its increase, and additions are made from time to time as the needs of the different departments require. Dec. 27, 1883, William Knowlton gave \$2,000; Jan. 1, 1894, Charles L. Flint gave \$1,000; in 1887 Elizur Smith of Lee, Mass., gave \$1,315. These were the largest bequests and now amount to \$10,375.52.

Endowed Labor Fund.—Gift of a friend of the college in 1901, income of which is to be used for the assistance of needy and deserving students, \$5,000.

Whiting Street Scholarship Fund.—Gift of Whiting Street of Northampton, for no special purpose, but to be invested and the income used. This fund is now used exclusively for scholarship, \$1,000.00.

Hills Fund.—Gift of Leonard M. and Henry F. Hills of Amherst, Mass., in 1867, to establish and maintain a botanic garden, \$10,000.00.

Mary Robinson Fund.—Gift of Miss Mary Robinson of Medfield, in 1874, for scholarship, \$1,000.00.

Grinnell Prize Fund.—Gift of Hon. Wm. Claflin, to be known as the Grinnell agricultural prize, to be given to the two members of the graduating class who may pass the best oral and written examination in theory and practice of agriculture, given in honor of George B. Grinnell of New York, \$1,000.00.

Gassett Scholarship Fund.—Gift of Henry Gassett of Boston, the income to be used for scholarship, \$1,000.00.

Massachusetts Agricultural College Investment Fund.—Investment made by vote of trustees in 1893 to purchase one share of New York Central and Hudson River Railroad stock. The income from this fund has been allowed to accumulate, \$100.00.

Danforth Keyes Bangs Fund.—Gift of Louisa A. Baker of Amherst, Mass., April 14, 1909, the income thereof to be used annually in aiding poor, industrious, and deserving students to obtain an education in said college, \$6,000.00.

John C. Cutter Fund.—Gift of Dr. John C. Cutter of Worcester, Mass., an alumnus of the college, who died in August, 1909, to be invested by the trustees and the income to be annually used for the purchase of books on hygiene, \$1,000.00.

Alvord Dairy Scholarship Fund.—Gift of Henry E. Alvord, who was the first instructor in military tactics, 1869-71, and a professor of agriculture, 1885-87, at this institution. The income of this fund is to be applied to the support of any worthy student of said college, graduate or postgraduate, who may be making a specialty of the study of the dairy husbandry (broadly considered) with the intention of becoming an investigator, teacher, or special practitioner in connection with the dairy industry, provided that no benefits arising from such fund shall at any time be applied to any person who then uses tobacco in any form, or fermented or spirituous beverages, or is known to have done so within one year next preceding, \$4,000.00.

William R. Sessions Fund.—In accordance with the request of my deceased wife, Clara Markham Sessions, made in her last will, I bequeath to the trustees of the Massachusetts Agricultural College, Amherst, Mass., the sum of \$5,000, it being the amount received by me from the estate of the said Clara Markham Sessions. The said \$5,000 to be kept by the said trustees a perpetual fund, the income from which shall be for the use of the Massachusetts Agricultural College; and according to the further request of my deceased wife, made in her last will, this is to be known as the William R. Sessions fund, and is to be a memorial of William R. Sessions; and it is my special request that the said trustees shall make record of the fact that this fund came from the estate of my deceased wife, Clara Markham Sessions, in accordance with her request made in her last will, \$5,000.00.

J. D. W. French.—Gift of the Bay State Agricultural Society of Boston, Mass. This fund to be known as the J. D. W. French fund, and the Trustees of the Massachusetts Agricultural College are to use the income of this fund where it will do the greatest good, in the interest of Dairying and its allies, also in Forestry, as scholarships, loans, or prizes; especially, however, to help pay the expenses of the judging teams to the National Dairy Show and to the National Livestock Show, \$10,000.00.

Frederick G. Crane Fund.—Gift of Frederick G. Crane of Dalton, Massachusetts. The income of this fund is to be expended by the Trustees of the Massachusetts Agricultural College in aid of worthy undergraduate students of limited financial resources at the college, preference being given to residents of Berkshire County; such payments are to be known as the Frederick G. Crane Scholarships, \$25,000.00.

Massachusetts Agricultural College Fund.—The Massachusetts Agricultural Club gave \$500 to be used as a scholarship fund to the Massachusetts Agricultural College to help out deserving students there, who intended seriously to go into agriculture, interest on loans not to be charged until after graduation, \$500.00.

Charles A. Gleason Fund.—The gift of Charles A. Gleason of North Brookfield, Mass., a trustee of the college from 1889 to his death, September 29, 1925. "A clean record of noble deeds." This fund is to be used as the Trustees of the College shall direct. \$5,000.00.

Total of special funds, \$90,575.52.

FRED C. KENNEY,
Treasurer.

MASSACHUSETTS AGRICULTURAL COLLEGE

THE SIX WEEKS' SUMMER SCHOOL

JULY 5—AUGUST 12

1927



THE M. A. C. BULLETIN Amherst, Mass.

Volume XIX

May, 1927

No. 3

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FACULTY

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 ROLAND H. VERBECK, B.Sc., *Director of Short Courses.*
 ROBERT D. HAWLEY, B.Sc., *Secretary of the College.*
 FRED C. KENNEY, *Treasurer of the College.*
 BASIL B. WOOD, A.B., *Librarian.*
 MRS. MAUD MARSHALL, *Matron of Women's Dormitory.*

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 WINTHROP S. WELLES, B.Sc., *Professor of Agricultural Education and Head of Department.*

FACULTY COMMITTEES

Committee on Admission.
 DEAN WILLIAM L. MACHMER.
 DIRECTOR ROLAND H. VERBECK.
 DR. HENRY T. FERNALD.

TEN SUGGESTIONS FOR TEACHERS ATTENDING '27 SUMMER SCHOOL

(From the Journal of the National Education Association)

1. Consider attending a summer school which offers a complete change of scene and climate. The rural teacher will perhaps enjoy the attractions which a large city offers; the city teacher may prefer the summer course given on the coast or in the mountains.
2. Secure summer session catalogues from a number of institutions as soon as they are issued.
3. Study summer session catalogues to find which university or college offers courses in which you are most interested; what outstanding leaders are conducting courses in your field, and what prerequisites are required for these courses.
4. If the membership in a particular class in which you expect to enroll is limited to a small number, mail your application for enrollment in this class as early as possible before registration.
5. Write early for information concerning living quarters. Don't waste the first week of summer school hunting for a place to live.
6. Select one or two courses that will be of greatest help to you in your particular work next year. Consider taking at least one course that is purely avocational. Register for a play course, learn to swim, or renew your pleasure in tennis, etc.
7. Register for a reasonable amount of work. Change of work is a vacation, but overwork is not.
8. Make contacts with people whom you will enjoy knowing. Receptions, outings and parties are planned especially for summer school students. Show your appreciation by attending and having a good time.
9. If you are working toward a college degree ascertain whether the courses you are going to take meet the requirements which you think they do.
10. Work hard but have a good time; store up life enthusiasms.

MASSACHUSETTS AGRICULTURAL COLLEGE
SUMMER SCHOOL
APPLICATION FOR ENROLLMENT

Name
Address
Are you a teacher?.....Where?.....Subjects?.....
Are you a College Graduate?.....Institution, Degrees, Dates?
Are you a Normal School Graduate?.....Institution, Dates?
Are you a High School Graduate?.....Institution, Dates?
Are you a College Student?.....Where?.....Year?
Do you desire graduate credit?.....Where?
Do you desire college credit?.....Where?
I shall probably take the following courses:

.....
.....
.....

CERTIFICATE OF CITIZENSHIP

PRESIDENT'S OFFICE.

The Massachusetts Agricultural College charges a tuition fee of \$30 for the Summer Session to students who are not residents of Massachusetts. In order to satisfy the college authorities that an applicant is entitled to State tuition of \$10 they require a statement, signed by the clerk of the city or town in which the applicant resides, certifying to the fact that the applicant is a legal resident of said city or town. Such a statement may be made on the form below. If this is not presented when the student registers, the Treasurer has no option but to collect tuition on the above basis.

.....

To the President of the Massachusetts Agricultural College.

This is to certify that on the date specified below,.....

.....
Student's name

is a legal resident of.....
City State

Signed.....
Town or city clerk

Date.....
(Seal)

Mail this blank with your application blank to

ROLAND H. VERBECK, *Director of Short Courses*

MASSACHUSETTS AGRICULTURAL COLLEGE, AMHERST, MASS.



GENERAL ANNOUNCEMENT

The twentieth session of the summer school at the Massachusetts Agricultural College will begin July 5 and continue until August 12 inclusive. Only graduate and undergraduate work will be offered.

Admission. — There are no formal examinations for admission to the summer session. Students, both men and women, will be admitted to such courses as their preparation allows.

Purpose. — The summer school program is arranged for:

1. School superintendents and teachers connected with high schools, normal schools, colleges and universities who seek advanced instruction either with or without relation to an academic degree.

2. College students who desire to further their regular college work.

3. Teachers who desire to pursue courses that will better prepare them for their work.

4. Any serious student who finds courses suited to his preparation and needs.

Registration. — The hours of registration are from 9 A.M. to 5 P.M. on Tuesday, July 5. Students arriving in Amherst on these dates and between these hours should report immediately at the office of the Director of Short Courses in South College (telephone 424), where full information may be had as to board, rooms, registration, etc.

Classes will begin promptly at 8 A.M. Wednesday, July 6, and will be held as announced in the description of courses until Friday, August 12 inclusive. Classes will be held Saturday, July 9.

Registration of Graduate Students. — Graduate students who are not candidates for an advanced degree in the college are not required to file records of past training but should consult the Director of the Graduate School and secure his permission before registering for any courses. Such students will receive from the Director of the Graduate School upon request a statement of the work completed in the Summer Session. Graduate students who wish credit at the Massachusetts Agricultural College must meet the requirements of the graduate school.

Admission. — Admission to the graduate school will be granted: —

1. To graduates of the Massachusetts Agricultural College.

2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this college.

In case an applicant presents his diploma from an institution of good standing, but has not, as an undergraduate, taken as much of the subject he selects for his major as is required of undergraduates at the Massachusetts Agricultural College, he will be required to make up such parts of the undergraduate work in that subject as the instructor in charge may consider necessary. He shall do this without credit toward his advanced degree.

Admission to the graduate school does not necessarily admit to candidacy for an advanced degree,—students holding a bachelor's degree being in some cases permitted to take graduate work without becoming candidates for higher degrees.

Applications for membership in the graduate school should be presented to the director of the school. Full statements of the applicant's previous training, of the graduate work desired, and of the amount and kind of work already done by him as an undergraduate should be submitted, together with a statement whether the applicant desires to work for a degree.

Registration is required of all students taking graduate courses, the first registration being permitted only after the student has received an authorization card from the director.

Change of Program. — Regular exercises will begin promptly on July 6. Notice of any proposed addition or cancellation of courses must be reported at once in person at the office of the Director of the Summer Session. Students will be allowed after securing the consent of the Director to make such additions or cancellations up to and including July 9. After July 9 they will be permitted to make no changes whatever. A student attending any course is required to do the full work assigned to the class.

Credits. — All courses are measured in terms of credit units. A credit is earned by carrying a course that meets two hours a week throughout a term of six weeks. As a rule two hours of laboratory work are considered the equivalent of one hour of lecture or recitation. The total amount of collegiate credit which may be earned can not exceed 10 term credits; for graduate credits a maximum of ten are allowed.

Recreation. — The Summer Session offers many advantages. Amherst is a quiet college town located in the beautiful Connecticut Valley. The living conditions are excellent and especially desirable for students who wish to spend a part of the summer in study in restful surroundings. The social life of the Summer School is attractive. A series of informals, Saturday excursions, lectures, entertainments and picnics have been arranged. There are many attractive places, groves, brooks, woods, picnic grounds near Amherst easily accessible.

Golf. — Amherst has a fine nine-hole course and privileges are extended to summer school students at a special rate of \$6.00 for the six weeks. Cards should be secured at Treasurer's Office.

Riding. — The College has excellent facilities for horseback riding. Saddle horses are available through the courtesy of the Military Department and instruction is given by United States Army officers.

Tennis. — There are many fine tennis courts available for summer school students.

Informals. — At regular intervals through the session informal social gatherings will be held in the Memorial Building.

A reception to all summer school students will be held in the Memorial Building Friday evening, July 8. Secure tickets at Short Course Office for all summer school social affairs at time of registration.

Expenses. — There is a tuition charge of \$10 to residents of Massachusetts. Non-resident students must pay a tuition fee of \$30 for the summer session. Special fees; recreation \$2.00 (for all students); auditor's fee, \$2.00.

The total estimated expense for the summer session need not exceed one hundred dollars (\$100.00) itemized as follows: Board for six weeks, \$45.00; room rent six weeks, \$18.00; books, \$5.00; laboratory fees, \$5.00; tuition, \$10.00; laundry, \$6.00; incidentals, \$10.00.

Rooms (Women). — The women's dormitory is available for women students. There are thirty double and thirty-eight single rooms. A uniform rate of \$3.00 per week will be charged each student. *Each one will be required to supply her own blankets, sheets, pillow cases, etc.* Convenient arrangements for laundry work may be made in Amherst. *Students taking rooms in the dormitory must conform to dormitory regulations.* Observance of these regulations is one of the conditions under which the rooms are rented and failure to comply with the regulations will mean a surrender of the room and a forfeiture of the amount paid. A student whose conduct is not satisfactory may be asked to withdraw from the dormitory.

All requests for dormitory rooms must be made to the Treasurer of the college. A deposit of \$3 is required in order to secure a reservation in the dormitory. Students will be notified by the Treasurer, upon receipt of the fees, as to the location of the room. In case any change is desired, the request should be made immediately. Deposits will not be refunded after the beginning of the summer session. The deposit is applied to total payment for the room at registration.

Rooms (Men). — Comfortable rooms can be secured at moderate prices in private homes as follows:

Single room \$3.00–\$4.00 per week; double rooms or suites for two persons \$2.00–\$3.00 per person; board \$7.00 per week and up. A list of rooms available in the village will be furnished to summer school students at the time of registration.

Board. — The college maintains a cafeteria on the self-service plan in Draper Hall, on the college grounds. Board may be had at from \$6.00 to \$8.00 per week. Good boarding places can also be secured outside of the college if desired.

Laboratory Fees:

Clothing	\$1.00
Foods	2.00
55. Garden Flowers and Bedding Plants	1.50
75. Physical Chemistry	5.00
75. Types and Varieties of Garden Vegetables	2.50

80. Physiological Chemistry	\$4.00
100. Plant Physiology	3.00
110. Microbiology	3.00
130. Microbiology	3.00
180. Microbiology	3.00
191. Garden Design	2.50
194. Surveying and Mapping	2.50

Assemblies. — A student assembly is held once a week on Monday, from 7.00 to 8.00 P.M. At this assembly the notices of the summer session are given, reports of social and other committees made and other business of interest to the student body is transacted.

Rules and Regulations. — As a guide to those who come to the College for the first time, the following extracts are taken from the regular rules of the College:—

The customary high standard of college men and women in honor, manliness, self-respect, and consideration for the rights of others constitutes the standard of student deportment.

It should be understood that the College, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend but also to name conditions under which students may remain in the institution.

It is the custom of the College that all socials should first have the approval of some recognized College authority.

The College. — The College campus occupies an attractive site three-quarters of a mile north of Amherst center. It is connected with the town and the railway station by electric car service. The College has over 700 acres of land, most of which is in a high state of cultivation, and illustrates most of the leading agricultural industries of Massachusetts. There is a large range of greenhouses of the most modern and approved type; there is a modern dairy barn with a large herd of pure-bred cattle; there are good horses, pure-bred swine, sheep, and poultry; there are fields of corn, potatoes, clover, and grass in season; orchards of apple, peach, plum, and pear trees; tracts of good forest land, nurseries, and market gardens. There are also considerable tracts devoted to experiments, many of which are of unusual interest. Then there are well-equipped departments of botany, entomology, and chemistry, dealing in the most thorough manner with these special sciences. The advantages of the plant, equipment, and teaching staff are made available to Summer School students.

The Library. — The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the College. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences, connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers are regularly taken and both the current numbers and the back files are readily accessible.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Graduate Studies. — Graduate work is available during any term of the year; in the summer quarter, however, special arrangements must be made with the head of the department in which the student plans to take work.

With the exception of courses 51 and 55 all courses included under "Courses in Education" are available for graduate credit.

The following table indicates the undergraduate courses listed in this catalog which may be taken for graduate credit and the corresponding graduate school numbers of the courses. The maximum amount of credit that may be earned by students doing extra work is also indicated.

Courses in Education

<i>Undergraduate Numbers:</i>	<i>Graduate Numbers:</i>
No. 52	No. 100 (1-10 credits)
No. 76	No. 115 (1-10 ")
No. 79	No. 120 (1-7 ")
No. 75	No. 125 (1-7 ")
No. 56	No. 130 (1-10 ")
No. 95	No. 135 (1-10 ")
No. 93	No. 140 (3 ")

Courses in Science

No. 181	No. 181
Nos. 110-130-180	Nos. 110-130-180
No. 100	No. 100
No. 102	No. 102
No. 106	No. 106
No. 191	No. 191
No. 194	No. 194

SUMMER SCHOOL COURSES EDUCATION

The courses indicated here are intended primarily for those who are engaged in teaching or who are preparing to teach. Some of them are of value as general courses for those not having this particular objective. Opportunity is offered for both undergraduate and graduate work. Our experience indicates that these opportunities are especially appreciated by students who are pursuing work toward a degree. Through the co-operation of the State Department of Education the College is able to offer special advantages in training in the field of secondary school teaching and vocational teaching. In this co-operation R. O. Small, Director of Vocational Education, F. W. Morse, Supervisor of Secondary Education; R. W. Stimson, Supervisor of Agricultural Education and possibly others will participate.

51. Principles and Methods of Teaching. — Consists of a study of general principles of teaching and school management applied to particular "cases" taken from actual experience in public school work. Discussions of rational solutions of these "cases" tend to fix the ideas in methods. Certain assigned and optional readings are required. These are both technical and inspirational in character and cover the best there is printed on the subject of methods of teaching. They are supported by sharp class discussions of the main issues. Exercises in teaching under supervision are also required with criticism and discussions of methods and results. A basic text is used. 10 class hours. Credit 5. *Professor Welles.*

52. History of the Philosophy and Practise in Education. — (Offered in Summer School of 1928.) A study of the development of philosophical ideas and movements and their relation to educational theory and practice. The relation between the fundamental aspects of the history of education and the significant factors in the history of civilization is stressed. 10 class hours. Credit 5.

55. Introduction to Psychology. — A study of the fundamental principles of Psychology both from the standpoint of method and content. Constant attempts are made to explain human behavior both mental and physical in the light of the principles studied. It is a basic course for those anticipating further study in psychology as well as a practical cultural course for those who can take but one course in this field. 10 class hours. Credit 5. *Professor Metcalf.*

56. Educational Psychology. — An application of the principles of psychology to the problems of education. Emphasis is placed upon (1) Individual differences — their nature, cause, measurement and significance; (2) Learning — its nature and most economical methods; (3) Transfer of training — amount and significance. 10 class hours. Credit 5. *Professor Glick.*

75. Secondary Education. — This course has two main objectives: (1) To aid high school teachers and principals in gaining a valuable perspective of the aims and functions of secondary education and to give them a near view of the details by which these are realized. (2) To present administrative phases of secondary education that are involved in curricula, schedules, extra curricular activities,

relations with other organized forms of education, etc. Inglis' "Principles of Secondary Education" or its equivalent is used as a text. 6 class hours. Credit 3. *Professor Welles.*

76. Special Methods in Teaching Vocational Agriculture. — The work consists of outlining lessons and projects for the teaching of agriculture or related subjects in agricultural schools or departments; the application of principles of vocational education as embodied in the Smith-Hughes Act and other legislation relative to agricultural education; the necessary adjustments relating to the school, community and administrative officials. (Students electing this course should not elect Course 103.) Undergraduates must secure the consent of Professor Welles before enrolling. 10 class hours. Credit 5. *Professor Welles and Mr. Heald.*

79. Tests and Measurements. — A critical study is made of the development, theory, use, application, etc., of the various types of mental tests and measurements with emphasis upon their function in the schools. Practice is given in the administration and scoring of tests. Modern statistical methods are applied to the interpretation of results. 4 class hours. 2 laboratory hours. Credit 3. *Professor Metcalf.*

80. Supervised Teaching. — This course offers an opportunity for a very limited number of undergraduate students to secure the advantages of a term of apprentice teaching during the summer in schools that carry summer work in agriculture, summer science, project supervision and boys' clubs. Consult Professor Welles, for detailed information. Credits 1-5.

93. Experimental Psychology. — (Offered in Summer School of 1928.) Demonstrations are made of the apparatus and methods of experimental psychology. Experiments are performed by members of the class. Statistical treatment is applied to the experimental data. The objective of the course is to develop scientific observation of human behavior. 6 class hours. Credit 3.

95. Modern Trend in Educational Philosophy. — A general survey of present philosophical theories and tendencies with special emphasis upon their significance in determining present educational objectives and practices. Credit 3. *Professor Glick.*

103. The Employed Teacher of Agriculture. — A seminar course primarily for employed teachers and directors of vocational agriculture. Prospective candidates may be admitted by special arrangement. The course deals with problems which grow out of the experiences of Massachusetts teachers of vocational agriculture. It presupposes some acquaintance with the essentials of Course 51, "General Methods," which, while not required as prerequisite, might well be taken parallel with if not previous to this course. Constructive assignments bearing upon the individual experiences and prospects of the members of the class are merged with the campaigns under way for better teaching in agricultural schools. "Summer Teaching," "Project Work and Project Study," "Courses and Plans in Use," "Departmental Relationship" are among the topics developed by the entire group. No student should elect both Special Methods (Course 76) and this course during the same term.

It is desirable that, by previous correspondence, a plan may be developed with reference to individual problems and the instructor will recommend some definite data relating to the problem to be secured before the summer school opens. 10 class hours. Credit 5. *Mr. Heald.*

104. Vocational Education. — A study of the laws, rulings and policies in Federal and State supported vocational education in the United States. The philosophy and experiences leading to the legislation and the evolution, especially in Massachusetts since 1906 of a well defined body of practice. The types of work involved, the occupations represented, the administration and supervisory problems, standards set, approval factors, machinery necessary and dangers to be avoided. Day schools, part-time and continuation schools, evening schools. Relation to other secondary education. While leaning toward the agricultural field this course avoids the specific phase treated in the "Methods" courses. Mr. R. O. Small, Director of Vocational Education, and Mr. R. W. Stimson, Supervisor of Agricultural Education, each give one week of service in this course. Brief

correspondence in advance addressed to the instructor in charge will enable the student to secure maximum values from the course. 6 class hours. Credit 3. *Mr. Heald.*

HOME ECONOMICS

Home Economics I. Clothing.—Emphasis will be placed on clothing selection, and on design, color and becomingness to the individual. Practice will be given in making simple garments, for the students in the class or for children, using mainly cotton and linen materials. Laboratory made garments will be compared with ready made with emphasis on the quality of material. 1 lecture hour and 1 two-hour laboratory period daily. Credit 5. *Miss Cleveland.*

Home Economics II. Foods.—Principles of cookery with the meal as a working basis. The course gives the fundamental principles of selection and preparation of food. Emphasis is placed on the development of recipes from foundation formulæ and on the consideration of food costs in relation to the home budget. 1 lecture hour and 1 two-hour laboratory period daily. Credit 5. *Miss Titsworth.*

Home Economics III. Home Furnishing.—This course aims to develop good judgment and right standards in the selection and arrangement of home furnishings. There will be discussions of color combinations, good spacing, also the treatment of floors, walls, and woodwork, and practical problems in the choice and arrangement of furnishing from an economic and artistic standpoint. Field trips will supplement class work. 1 lecture hour and 1 two-hour laboratory period daily. Credit 5. *Mrs. Fish.*

Home Economics IV. Millinery.—This course considers different types of hats, their appropriateness and becomingness and use as part of the costume. Practical work will be given in making and trimming several hats. 1 lecture hour and 1 two-hour laboratory period daily. Credit 5. *Mrs. Preble.*

SCIENCE AND ALLIED COURSES

Insect Life.—An introductory course, arranged with particular reference to the needs of teachers in grade schools and high schools who are expected to teach about insects, either as a part of nature study or in their relations to agriculture. Five lectures per week, during which period the entire subject of Entomology is considered. Credit $2\frac{1}{2}$ or $3\frac{1}{2}$. One additional credit is given to those who elect to take the field work. *Dr. Alexander.*

Lectures.—In the lectures, particular stress is placed upon such subjects as the position of insects in the animal kingdom, their general morphology and metamorphosis, the general principles of control, and a detailed consideration of the more interesting and important local species. In all cases, the discussion is illustrated by actual specimens representing the species concerned. Special instruction is given in the subjects of collecting apparatus, collecting methods, and the making and care of a collection.

Field Work.—One field-trip each week, on Saturday afternoon. Students electing this entomological field work will be required to have a certain collecting equipment, as nets, killing bottles, boxes and insect pins. These can be obtained from the college at cost-price. The Entomological Laboratory of the College, Fernald Hall, has the reputation throughout the scientific world of being one of the finest and best-equipped laboratories in existence. Students making collections will be given opportunity to mount and preserve the material secured, and aid in the identification of such specimens will be given by the instructor. This opportunity should be especially attractive to teachers of Biology who wish to start a small reference collection of insects as an aid to their future teaching. Two of the field-trips will consider the life of still water (the College Pond) as contrasted with that of rapid-flowing streams (Orient Springs, near West Pelham). Such a comparison furnishes a surprising series of adaptations to environments. A third trip is planned to Mt. Toby, where especial stress will be placed upon those kinds of insects that are destructive to our forests and shade trees. Other field-trips will consider other phases of entomology. Although especial stress in this course is placed upon insects, a broader field is opened in this field work, and the general subject of natural history and nature study is touched upon for such students as wish instruction in this subject.

Botany for the Teacher. — This course is intended primarily for secondary school teachers of botany, biology, general science, nature study and elementary agriculture. Principles of teaching, methods, model lessons, course content and subject matter are some of the things considered. Collecting and identifying weeds, grasses, trees, shrubs and common "wild flowers" are a feature of the course. 4 two-hour and 2 one-hour periods per week. Credit 3. *Dr. Davis.*

181. Public Health. — This course will treat the following subjects: the human body in health and disease; individual, family and social elements; agencies of disease — nutrition, and food including milk, food poisoning and infection, air and ventilation, water and water supplies, sewage and sewage disposal, avenues of infection, susceptibility and resistance; communicable diseases, isolation and disinfection; public control; health laws and organization.

The course is designed to meet the needs of public school superintendents, principals, and teachers. 5 class hours. Credit 3. *Mr. Fuller.*

110, 130, 180. Microbiology. — Laboratory studies in microbiology will be given together with readings and conferences. The aim will be to provide a comprehensive understanding of protoplasm and its functionings through the medium of living forms. Owing to the simplicity of microbic life, fundamental concepts may be realized with greater ease than with more complex forms of life. Attention will be given to the distribution of microorganisms in nature, the role they play in the economy of nature, and their values in human welfare and existence. Credit will be given for the time devoted to these studies and the progress made. *Mr. Fuller and Miss Garvey.*

NOTE. — The courses in "Public Health," and "Microbiology" will be open to college graduates, normal school graduates and undergraduates in college above the sophomore year only. The subjects may be applied upon minor requirements in graduate study.

First Principles of Geology and Physiography. — (Equivalent to Geology 52.) This course furnishes an introduction to the various aspects of physical geology. Hand in hand with a study of the materials which compose the earth's outer shell, their nature, special structures and relations to each other, are considered the processes by which rocks are formed and changed. The principles gained from lectures, reading and laboratory exercises are, so far as possible, applied by the student to the interpretation of conditions in the field. As geologic processes condition surface features of the earth the student is brought to a consideration of the origin and history of land forms. The exposition of concepts and principles, as given in this course, is intended to afford the student such insight into the subject that the knowledge gained may be adapted by teachers to their needs. No effort is made to develop any special methods of instruction in geology. A knowledge of the elements of physics and chemistry is assumed. Class hours and laboratory periods are used freely for such purposes as progress requires. A regular field trip will be regarded as equivalent to two laboratory exercises. The Connecticut Valley offers peculiar advantages for elementary field studies in geology and physiography. Students who desire this course should register early so that a reading text and laboratory manual may be ordered. Students taking this course, if qualified, are advised to take the companion course in Historical Geology. 5 lecture hours and 5 two-hour laboratory periods per week. Credit 5. *Professor Gordon.*

Historical Geology. — A course dealing with the history of life on our globe. The treatment of this subject assumes a knowledge of the elements of biology and understands that the student either has had a course in elementary geology or is taking as a parallel course the one offered in First Principles of Geology and Physiography. A text is used for supplementary reading and other documents are available for special assignments. Specimens in the zoological and geological collections furnish illustrative material for the laboratory work. 3 lecture hours and 3 two-hour laboratory periods per week. Credit 3. *Professor Gordon.*

Physical Chemistry. — (Chemistry 75.) A study of the laws and theories concerning the behavior of gases, liquids, and solids; homogeneous and heterogeneous equilibria; velocity of reactions; phase rule; atomic structure, radioactivity; ionization and an introduction to colloid chemistry. The laboratory work includes

exercises on molecular weight determinations; velocity constants; distribution coefficients; solubilities, conductivity measurements; preparation and properties of colloidal dispersions and other determinations for the purpose of familiarizing the student with the methods involved in physico-chemical measurements.

The course is designed primarily to meet the needs of high school teachers of chemistry, either from the standpoint of professional improvement or as a part of their minor requirements towards an advanced degree. It should prove equally valuable to teachers of the other sciences, providing they have had previous courses in chemistry. Prerequisite: General Chemistry and Qualitative Analysis. Quantitative Analysis is desirable, but not absolutely essential. 5 lecture hours and 2 four-hour laboratory periods per week. Credit 5. *Professor Serez.*

Physiological Chemistry. — (Chemistry 80.) Open to those who have had an elementary course in chemistry. Designed to acquaint the student with the chemistry of the physiological processes in plants and animals. The study of food, its digestion and utilization by the human body is the principal subject. The physiology and functions of the principal organs of the body, including the effects of abnormal functioning and recent advances in correcting the same, are discussed. In the laboratory experimental studies are made of the processes and products of digestion, secretion and excretion.

The course, while of general interest, should appeal especially to those specializing in home economics, dietetics, chemistry, microbiology, botany and animal husbandry. 5 lecture hours and 2 two-hour laboratory periods per week. Credit 3-5. *Dr. Butler.*

Beekeeping. — (Introductory Beekeeping 65.) A detailed study of the bee colony is made, including the colony and its organization, the life of the individuals in relation to the colony and the cycle of the year; also a discussion of the possibilities in beekeeping as a biological study and as a side line commercially. Laboratory work is largely devoted to a study of bee behavior in the field; practice in manipulating the colonies for proper colony control and maximum honey production. This course is designed to parallel course Entomology 65, Introductory Beekeeping, and may be substituted for it when the student desires to take the advanced course during the nine months' school. 3 lecture hours and 2 two-hour laboratory periods per week. Credit 3. *Mr. Farrar.*

Horticultural Manufactures. — (For description see special Horticulture and Landscape Gardening Course.)

Garden Flowers and Bedding Plants. — (For description see special Horticulture and Landscape Gardening Course.)

Plant Materials. — (For description see special Horticulture and Landscape Gardening Course.)

Dramatic Presentation. — Professor Patterson's course in Dramatic Presentation has been given to large classes since the beginning of the Summer School. Professor Patterson is a pupil of M. T. Brown, S. S. Curry, Otis Skinner, George Riddle, and others. He made a special study of the stage at the Comedie Francaise, Paris, where he was a pupil of Georges Berr. For some years he was on the professional stage with the Boston Museum Company, Maude Banks, Margaret Mather, and Otis Skinner. Mr. Patterson is known as a reader especially of Shakespeare's plays and Rip Van Winkle. He has given courses at West Virginia University, Boston School of Expression, and elsewhere.

The cultural value of dramatics to the individual and to the rural community is very great. Amateur plays are too often conceived as mere shows or social relaxation, and are produced in absolute ignorance of stage values, effective stage directions, proper play selection, character casting, and interpretation. Play production can be made both an art and a school for the rural community.

The course is practical. The members of the class are rehearsed in several plays. A few of the best plays are presented before the school. These presentations have attracted large audiences every year. The needs of teachers who produce plays in our schools are specially considered. 2 lectures and 3 two-hour practice periods a week. Credit 2½. *Professor Patterson.*

of
GRADUATE AND UNDERGRADUATE COURSES IN HORTICULTURE

The Summer School of 1927 presents a special program of courses in Horticulture and Landscape Gardening.

Admission. — The courses are designed to meet the needs of recent graduates who wish to undertake intensive study in various lines of Horticulture and Landscape Gardening. Those having bachelor's degrees will register in the Graduate School and may receive credit toward advanced degrees. A limited number of qualified undergraduate students will also be admitted, registering in the Summer School and receiving credits which may be counted toward the bachelor's degree. Students registering thus in the undergraduate school will be required to bring evidence that they are in good standing in some institution of college grade.

Program of Courses. — The following program of courses will be offered. The College reserves the right to withdraw courses for which fewer than five registrations are received.

102. Modern Orchard Practice. — A critical statement of modern practice in the cultivation, pruning, spraying and fertilization of orchards based on commercial experience throughout the country. Endeavor is made to distinguish between what is sound, settled practice, and what is merely experiment or personal whim; also between what is general and what is purely local. The classroom instruction will be supported by constant reference to the college orchards and other commercial orchards in the vicinity. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Sears.*

106. Advanced Systematic Pomology. — This will follow the usual lines of taxonomic study, except that the summer season will offer ample opportunity for the study of trees, twigs and leaf characters in the orchards. This part of the course will be emphasized, and the application of twig and leaf identification to nursery stock certification will be fully worked out. 5 lecture hours and 1 three-hour laboratory period per week. Credit 3. *Mr. French.*

76. Horticultural Manufactures. — This general course will cover the usual practices of canning fruits and vegetables, in manufacturing jams, jellies and other by-products of fruit and vegetables. Effort will be made to adapt this work to the needs of pomological students on the one hand and of teachers of household economics on the other. 2 lecture hours and 3 two-hour laboratory periods per week. Credit 3. *Professor Chenoweth.*

191. Garden Design. — Special study will be given to the principles of sound design as applied to smaller garden problems. Emphasis will be placed upon the ideas characteristic of American home gardens of the present time. Good local examples will be studied in the light of these principles. Problems in design will be given, adjusted as far as possible to the preparation of individual students. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Waugh.*

194. Surveying and Mapping. — Will be studied with special reference to their application in the general practice of landscape architecture. The work will be adjusted to the preparation of individual students. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Harrison.*

Plant Materials. — (Equivalent to Horticulture 52.) Especially hardy trees and shrubs used in general landscape planting; their identification, propagation, culture and use in landscape gardening. The collection on the college grounds offers excellent opportunity for such summer study. 6 lecture hours per week. Credit 3. *Professor Thompson.*

Garden Flowers and Bedding Plants. — (Floriculture 55.) Will cover the general field of out-door floriculture, especially as practiced in connection with floriculture and landscape gardening. The propagation and culture of perennials, annuals, and bedding plants will be studied with ample work in the college garden. 5 lecture hours and 1 afternoon per week. Credit 3. *Professor Thayer.*

Types and Varieties of Garden Vegetables. — (Vegetable Gardening 75.) This will be a systematic study of a few principal groups of common garden vegetables, the endeavor being made to point out the leading types and commercial

strains, to show in how far such strains are fixed and reliable, what is their taxonomic status and their economic value. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Snyder.*

Forest Ecology. — The general principles of plant ecology as shown in forest composition; relations of light, moisture, temperature, etc. The work will be illustrated by reference to the college wood lot and forest and by a large amount of material collected in the Northeastern Forest Experiment Station. This course is given by Professor L. R. Grose and specialists of the Northeastern Forest Experiment Station of the United States Forest Service. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3.

100. Plant Physiology. — A somewhat general and elementary course is proposed, dealing with the simpler problems of plant physiology as they are more directly of interest to horticulturists. The work will be largely individual in plan so that it can be adapted to the needs of different students with different problems and with different degrees of preparation. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Clark.*

General Economic Entomology. — (Entomology 28.) Will deal with those insects of direct economic interest to the horticulturist and landscape gardener; their identification, life histories and general control. The work will be largely of an individual nature, allowing students to study particular groups of interest to them, and permitting students of different degrees of preparation to work effectively. 5 lecture hours and 1 two-hour laboratory period per week. Credit 3. *Professor Fernald.*

NOTE: Special work in various departments may be arranged for qualified graduate students. It is possible that some such arrangement may be made outside the departments listed above. This opportunity for individual work is considered an essential feature of the general plan, and will be developed as fully as the needs and abilities of students may justify.

SHORT COURSES AT MASSACHUSETTS AGRICULTURAL COLLEGE

TWO-YEAR COURSE IN PRACTICAL AGRICULTURE

The Two-Year Course is divided into seven sections — dairying, animal husbandry, poultry, floriculture, horticulture, pomology, and vegetable gardening.

No examinations are required. Minimum age seventeen years; minimum schooling eighth grade.

The first year consists of six months' study at the College and six months of required farm placement training, under the supervision of the College. During the placement period the student is expected to learn much of the practical side of his particular vocation. He is recommended to a position. These positions are on farms, in dairies, greenhouses, poultry plants. The nature of the position depends on the student's particular interest.

The second year consists of nine months' study at the College. On the completion of the course a certificate is granted. Tuition is \$20.00 per term to residents of the Commonwealth.

ONE-YEAR VOCATIONAL POULTRY COURSE

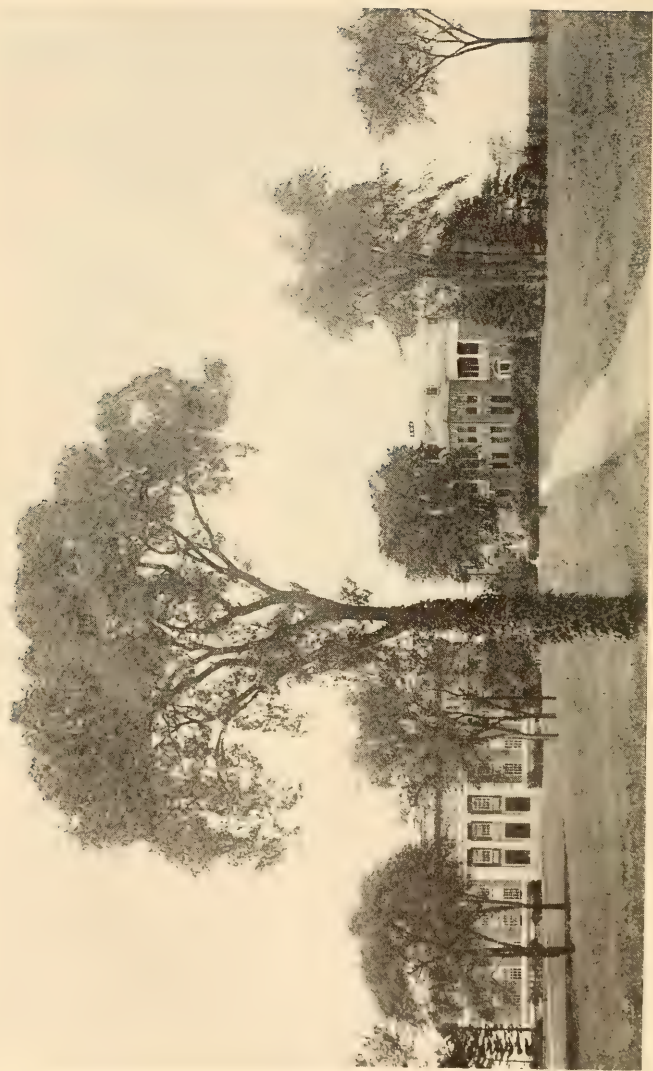
This course is limited to 12 students. It begins January 1 of each year. Students are required to do a large amount of practical work at the College plant. It provides excellent training for the man who wishes to go into poultry as a business.

TEN WEEKS WINTER SCHOOL

The dates of this school are approximately from January 1 to March 10. The following subjects are offered:

Agronomy	Farm Management	Special Fruit School
Types and Breeds	Botany	Special Floriculture School
Livestock Feeding	Entomology	Special School for Greens-keepers
Animal Breeding	Sanitation and Hygiene	Professional Improvement Problems
Animal Diseases	Farm Structures	Agricultural Education
Poultry Husbandry	Foods	Ten Day Dairy Courses in:
Vegetable Gardening	Clothing	Milk Testing
Floriculture	Business of the Household	Milk Plant Operation
Horticulture	Home Care of the Sick	Ice Cream Making

The Winter School appeals to practical farmers and all who wish short, intensive, yet thorough courses suited to the practical man.



Stockbridge Hall and Dining Hall

THE M. A. C. BULLETIN

Amherst, Massachusetts

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CALENDAR, 1927-1928

Two-Year Course

1927

October 3, 4, Monday, Tuesday	Registration
October 5, Wednesday, 8 A.M.	Fall term begins
October 12, Wednesday	Holiday, Columbus Day
November 23-28, Wednesday, 12 M.; Monday, 8 A.M.	Thanksgiving Recess
December 17, Saturday, 12 M.	Fall term ends

1928

January 3, Tuesday, 8 A.M.	Winter term begins
February 22, Wednesday	Holiday, Washington's Birthday
March 17, Saturday, 12 M.	Winter term ends
March 26, Monday, 8 A.M.	Spring term begins
April 19, Thursday	Holiday, Patriot's Day
May 30, Wednesday	Holiday, Observance of Memorial Day
May 31-June 4, Thursday-Monday	Commencement
October 1, 2, Monday, Tuesday	Registration
October 3, Wednesday, 8 A.M.	Fall term begins
October 12, Friday	Holiday, Columbus Day
November 28-December 3, Wednesday, 12 M.; Monday, 8 A.M.	Thanksgiving Recess
December 15, Saturday, 12 M.	Fall term ends

1929

January 2, Wednesday, 8 A.M.	Winter term begins
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STAFF

Officers of General College Administration

ROSCOE W. THATCHER, D.Agr., LL.D.
President of the College

WILLIAM L. MACHMER, A.M.
Dean of the College
FRED C. KENNEY
Treasurer of the College

ROBERT D. HAWLEY, B.Sc.
Secretary of the College
BASIL B. WOOD, A.B.
Librarian of the College

ROLAND H. VERBECK, B.Sc.
Director of Short Courses

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HAROLD W. SMART, LL.B.	50 Pleasant Street
<i>Instructor in Business Law, Business English and Rural Sociology</i>	
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GERALD J. STOUT, M.S.	Inwood
<i>Instructor in Vegetable Gardening</i>	
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<i>Instructor in Agronomy</i>	
CLARK L. THAYER, B.Sc.	North Amherst
<i>Professor of Floriculture and Head of Department</i>	
CHARLES H. THOMPSON, M.Sc.	Mount Pleasant
<i>Professor of Horticulture</i>	
CARROLL A. TOWNE, B.Sc.	
<i>Instructor in Horticulture</i>	
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RALPH A. VAN METER, B.Sc.	7 East Pleasant Street
<i>Professor of Pomology</i>	
PAUL W. VIETS	Sunset Avenue
<i>Supervisor of Placement Training</i>	

TWO-YEAR COURSE IN PRACTICAL AGRICULTURE

The Two-Year Course in Practical Agriculture was organized in 1918 to meet the demand for a short course in agriculture that might be taken by students who either did not possess college entrance requirements, or who, for one reason or another, were unable to take the regular Four-Year Course.

Since its organization, at the request of the Massachusetts Legislature, the Two-Year Course in Practical Agriculture has registered over 1,000 students. There are now over 500 graduates of the course. Practically all of these are in Massachusetts or in New England, but graduates of the course are to be found in Florida, California, and many other states of the Union.

The growth of the course and the demand for more specific vocational training made necessary a reorganization of the work in 1921. As now arranged the student

may specialize in one of seven vocations, — animal husbandry, dairy manufactures, floriculture, horticulture, pomology, poultry and vegetable gardening. This specialization does not prevent his securing a general working knowledge of other subjects.

The Two-Year Course will appeal not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming.

FARM PLACEMENT

The work of placing students on farms is in charge of the supervisor of farm placement training. Farms are selected in the State that will enable a student to gain practical experience in his particular vocation. This farm experience may, by special arrangement, be secured on the home farm. As a rule, it will be found better for a student to spend this six months away from the home farm, even though he plans to be employed on the home farm after finishing the course. This statement is based on the experience of students who have already taken the course.

If credit is to be secured for the six months' placement training the following conditions must be carefully observed: (1) the student must interview the supervisor early in his first year in order that his qualifications, the type of farming he wishes to pursue, and his general fitness may be determined; (2) no arrangement for placement training may be made by the student himself until the supervisor has been consulted; (3) students are required to complete their period of training without unnecessary absences; (4) no transfers are to be made by a student if he is to receive credit until permission has been had from the supervisor; (5) a position may not be given up by the student until the supervisor has been notified; (6) a monthly report must be furnished on the form supplied, and submitted not later than the fifth of each month during his training period; (7) a student whose grade of work is regularly poor (below a 70 rating) in the classes of his major subject will not be eligible for placement training, unless recommended by the department in charge of his major work; (8) when a student fails to complete the requirements of his placement training with a satisfactory grade, he is not allowed to take the work of the second year; (9) all male students are given a thorough physical examination by the Department of Physical Education at the beginning of the college term. Any disabilities liable to affect the student's placement work are noted, and, if of a serious nature, recommendations for corrective measures are supplied. Parents should understand that most kinds of agricultural work require a well-balanced combination of brawn and brain. No student whose physical condition is questionable will be accepted for placement training without a physician's certificate, and parent's approval.

It should be clearly understood by both employer and employee that the same energy, regularity and general conduct will be expected of the student during his period of placement training as is expected in his work in classes and on the campus.

It should also be noted that this six months' farm experience is educational in its nature. Students are expected to earn and receive a reasonable wage, but the purpose of the training is the experience gained rather than the wage earned. The scale of wages may vary in different localities, but each man's ability is given very careful thought, that he may obtain a wage that is fair to him. In the event of any misunderstanding the supervisor should be immediately informed.

RULES AND REGULATIONS

Absences from Class

(1) No unexcused absences will be allowed from classes. (2) All excuses for absence shall be presented by the student in writing and, if approved by the Director, an excuse card will be granted to be signed by the instructor. Excuse cards must be returned to the office when properly signed. (3) Students presenting excuse cards covering absences are expected to make up all work missed, to the satisfaction of the instructor. (4) Absences for which no excuse card is pre-

sented shall be counted as zero in determining grades. (5) No excuses will be accepted at the Short Course Office unless presented within two days after the student returns to classes. (6) Two tardinesses unexcused shall count as one absence. (7) Absences from classes immediately before or after a holiday are not allowed except by special permission. (8) Students failing to observe these rules are placed on probation, and may be asked to withdraw from the course if further violations occur.

Absences from Examinations or Tests

(1) Any student who absents himself from an appointed examination without sufficient cause shall be given zero thereon. In such case he shall not be entitled to a make-up examination unless the Director so requests. A previously announced test may, at the discretion of the instructor, be regarded as a test or as an examination.

(2) Every absence taken before enrollment (the signing of the registration card by the teacher) in a class will be counted. The Director, however, may grant the special privilege of a visitor's card.

General Information

INSTRUCTION. — The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse and stables. It is designed to offer plain, practical, direct information, and to establish the underlying reasons as well as the method employed in the various operations. The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and women electing this course.

Entrance Conditions. — Students must be seventeen years of age or over and have completed at least an elementary school course or its equivalent. They must have had six months' practical farm experience before they will be permitted to enroll for the work of the second year. This experience may be gained after the first half year of study at the college.

The Two-Year Course is not intended for students already enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement, either from the principal of the high school or from the parent or guardian, requesting enrollment.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a certificate in one year, if they are recommended by the Director of the school or the agricultural instructor.

Scholarship in agricultural subjects and farm experience must be satisfactory. When farm experience is deficient, the certificate may be withheld until the farm placement training of six months is completed for required credits.

CREDIT AND CERTIFICATE. — In order to obtain a certificate a student is expected to have satisfactorily completed all of the work called for in the general course which he has selected. A total of 125 credits is required for graduation, of which twenty-five credits, or one-fifth of the total, are assigned to practical training. A student failing to meet the requirements in his six months' summer training cannot be enrolled for his second year, since he is not entitled to a certificate of graduation.

A credit is given for one class hour, of either recitation or lecture, per week throughout a term of twelve weeks. Each two-hour laboratory period also counts for one credit. The course calls for a minimum of twenty credits each term, that is, four subjects meeting five times per week, either in class or laboratory. Upon the satisfactory completion of the course, the student is given a certificate showing the work he has done and the grades he has obtained. **A certificate will not be issued to any student whose record shows a deficiency in any subject or in his farm placement training.** At the close of each term students receive a formal report showing the standings given in the subjects pursued by them. If a student's work is deficient in 50 per cent he may be asked to withdraw.

If a student's term mark in any subject falls below 60 per cent, or if he drops a course without the consent of the Director, he is thereby failed (F) in that subject. He shall be debarred from taking the final examination in that subject and must repeat it with the following class.

If the average of the term mark and the final examination is below 60 per cent, the student is thereby conditioned (#).

How to Enroll. — Each student is required to file with the treasurer of the college a statement, signed by the town (or city) clerk of the town (or city) from which he enrolls, stating that the parent or guardian of the student is a resident of that town. A blank for this purpose is inserted at the end of this catalogue. Upon arrival report at the office of the Director of Short Courses, located in South College, where information may be obtained in regard to board and room, schedule of classes, etc.

Student Expenses

TUITION. — Effective in September, 1926, a tuition fee of \$20 per term will be charged students, residents of Massachusetts enrolled in the four-year and two-year courses. Students who are not residents of Massachusetts are charged a tuition fee of \$60 a term. The tuition charged persons not citizens of the United States is \$60 a term. *Students entering from Massachusetts are required to file with the President a statement, signed by either town or city clerk, stating that the applicant's father is a legal resident of Massachusetts.*

All students entering the college for the first time in this course are charged a matriculation fee of \$5, which, in event of a student leaving the institution shall, if all bills due the college are paid, be remitted, or which shall upon graduation be considered as payment for the certificate.

LABORATORY FEES

The principles observed in establishing laboratory fees are the requirement that students pay for those materials actually used which cannot be supplied by the individual, and that the laboratory fees include a charge sufficient to guard against wanton waste and breakage. Fees may be established for any course without previous announcement. At present the fees charged are as follows: —

	Per Term
Agronomy S-1	\$1 50
Agronomy S-2	2 00
Animal Husbandry S-1, S-5	1 50
Animal Husbandry S-4	1 00
Dairying S-1, S-2, S-3, S-4	3 00
Floriculture S-3, S-5	3 00
Floriculture S-6	5 00
Horticulture S-1	1 00
Horticulture S-5, S-6, S-7	1 50
Microbiology S-2	5 00
Poultry S-1, S-2, S-3, S-4, S-5	2 00
Rural Engineering S-1, S-2, S-3, S-4, S-5, S-6, S-7	1 50
Vegetable Gardening S-1, S-2	1 50

INITIAL CHARGES

At the opening of the college year, before students are registered in their classes the following charges are payable at the treasurer's office: —

Matriculation fee	\$5 00	—
Board (at college dining hall) four weeks in advance	28 00	\$28 00
Assessment for support of Social Union	1 50	1 50
Laboratory fees	See schedule	See schedule
Student tax for support of athletics ¹	15 00	15 00
Student tax for support of non-athletic activities ¹	3 50	3 50

The necessary college expenses are estimated as follows: — Tuition: citizens of Massachusetts, \$20 per term, or \$40 for the first six months of class work (two terms), and \$60 for the second year of nine months (three terms); total tuition charge for the two-year course, \$100.

¹ While this is not essentially a college charge, the Treasurer of the college acts as collector for the student activity, and all students are expected to make the payment as indicated. The subscription price of the "Collegian" is fixed by the managers, the amount of athletic tax by vote of the student body.

	First Year	Second Year	Total
Matriculation fee	\$5 00		\$5 00
Room in private houses	72 00	\$108 00	180 00
Board at college dining hall, Required attendance for freshmen, \$7.50 per week	165 00	235 00	400 00
Laundry, \$.50 to \$.85 a week	20 00	30 00	50 00
Laboratory fees, average	10 00	15 00	25 00
Books, stationery, and miscellaneous items	30 00	45 00	75 00
Totals	\$302 00	\$433 00	\$735 00
Mass. Student tuition	40 00	60 00	100 00
Grand total	\$342 00	\$493 00	\$835 00

The six months' placement training between the first and second years enables a student to earn from \$300 to \$450 depending upon his skill and general ability, and the type of work. Of this amount \$200 to \$300 should be saved to apply to the expenses of the second year.

Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining clubs or entering into other social activities of the college. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$400 and \$500 per year.

Student Aid

SELF HELP. — Many students are obliged to find work of some sort to earn their way through college. It is recommended that no new student enter without having at least \$250 and preferably \$350 with which to pay his way until he can establish himself in some regular work. **The college does not encourage students to enter without money in the expectation of earning their way entirely.** The student will find it better either to work and accumulate money before coming to college, or to take more than two years in completing his course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work.

Students whose deportment or class work is not satisfactory are not likely to be continued in student labor. **Opportunities for labor for Short Course men on the campus are limited to second-year men in the Two-Year Course in Practical Agriculture.** Students, therefore, may find it rather difficult to obtain all the work they desire during their first year; as a matter of fact, however, any student who is capable of doing a variety of things, and who is a competent workman, usually finds little difficulty in obtaining all the work that he can do from the outset.

Rooms

Students must secure rooms approved by the college. The assignment of rooms, and the general supervision of the housing of students, is in charge of the Director of Short Courses.

Women students are expected to occupy rooms in the college dormitory and such houses or apartments as the college may provide, and board at the college dining hall. No woman student will be allowed to room in a private house without a special written permission from the Director.

General Exercises

Chapel exercises are held two mornings each week. On Wednesday an afternoon assembly is held, to which some prominent layman or professional man is invited to speak. The object of these assemblies is to bring to the students dis-

cussions of topics of present-day interest. A special chapel service on Sunday is usually held during the winter months. Students are required to attend these general exercises, although the Director is authorized to excuse from Sunday chapel any student who may object to attendance thereon because of his religious scruples.

Student Activities

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts Agricultural College Social Union was established about fifteen years ago. All students become members of the Union by paying a small fee, and in the fall and winter months the Union gives a series of entertainments, free to students and faculty. The Memorial Building is the center of student activities. Offices for the various student organizations, including the Two-Year Student Council, are maintained in this building. On the first floor are located a lounging room, the Memorial Room, and the offices; in the basement, bowling alleys, pool tables, store, post office, and barber shop; and on the second floor an auditorium for meetings and dances. This building was erected by the alumni, students, faculty, and friends in honor of the fifty-one "Aggie" men who gave their lives in the World War.

The Young Men's Christian Association is active both socially and religiously. A Catholic Club has also been organized.

The Two-Year Council is composed of representatives of the first and second year classes. This body serves as general director of the conduct in classes of the Two-Year men, and represents before the faculty the interests of this group of students.

Student Relations

The customary high standard of college men in honor, manliness, self-respect, and consideration for the rights of others constitutes the standards of student deportment.

Any student known to be guilty of dishonest conduct or practice must be reported by the instructor to the President for discipline.

The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the college, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet, if in the judgment of the college authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct.

Infirmary

The college maintains an infirmary for the care of sick or injured students. The buildings now available for this purpose are quite inadequate for the needs of the institution, and it is hoped that in the near future other buildings of this kind may be erected and the general equipment somewhat amplified. At present two small buildings, built especially for hospital purposes, are used for the infirmary.

The following statement outlines the plan followed in the management of the infirmary with respect to students:—

MANAGEMENT OF THE INFIRMARY

Supervision

1. The infirmary is under the *general supervision* of Professor Curry S. Hicks, who is designated as Supervisor of the Infirmary. A resident nurse is in *immediate charge* of the infirmary.

Use of Infirmary

2. Students are urged to go to the infirmary at any time that they are in need of the services rendered by the resident nurse or by a town physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that the majority of the students will go to the infirmary at his suggestion. This understanding, however, should in no way deter students from going to the infirmary voluntarily at any time.

General Health

3. Students are urged to consult the physical director or the resident nurse immediately when signs of physical disorder appear. Severe attacks of cold or other forms of illness can usually be avoided if treatment is administered in the incipient stage. The purpose of the infirmary is to help maintain the general good health of the students, as well as to furnish a suitable place for professional attention in cases of severe illness or accident.

General Fee

4. The infirmary fee will be at the rate of \$2 a day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge will be made to out-patients for miscellaneous treatment of a minor character.

Additional Expenses

5. In addition to the fee charged as specified in paragraph 4, the following additional expenses will be charged to the patient:—

(a) *Nurses*. — In case a special nurse is required for the proper care of an individual, the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) *Professional Service*. — If a student requires medical attention by a physician, he will be required to select his physician and become responsible for fees charged by the physician.

(c) *Supplies*. — Special medical supplies prescribed by a physician or nurse will be charged to the patient.

(d) *Laundry*. — Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

The Library

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Short Course Students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this material. The librarian and library assistants are always on hand, ready and anxious to help.

Agricultural Opportunities for Women

Agriculture is a field in which women are finding increasingly good opportunities. Poultry keeping, fruit growing, floriculture, dairying, truck farming, general farming, — all offer favorable openings for women. In all of these branches of agriculture women are farming independently. Women are also filling paid positions which include farm and estate managers and workers, garden supervisors, and workers in boys' and girls' agriculture clubs.

For the woman or girl whose home is already upon the farm the opportunity is exceptionally good. With the help of an agricultural education there are open to her many means of increasing her own or the farm income. With the knowledge of farm life which she already possesses, and with the possibility of securing occasional help from her family, she can easily carry on and develop a profitable enterprise of her own. The Two-Year Course in Agriculture will afford to the women who wish to engage in farming the practical training which they will need to fit them for their work, and will open to them new doors of opportunity. The particular problems which the women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

Women who are interested in taking agricultural courses should correspond with Miss Margaret Hamlin, who acts as adviser for agricultural courses for women. Women interested in home economics should address Miss Edna L. Skinner.

Positions

The college does not guarantee positions to students registered in any of its courses, but it has an opportunity to recommend students for a large number of positions. A record is kept of each student's work and of his farm experience, and of his success in positions for which he has been recommended after he has finished his course. The opportunities for trained men and women, especially those who have had farm experience, are exceptionally good.

A student desiring a recommendation from the college must meet the following conditions: —

- (1) He must be of good character.
- (2) His previous record must be good.
- (3) His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of farm experience cannot, as a rule, be recommended for positions of responsibility. This is especially true of the better positions for which managers or superintendents are wanted.

ANIMAL HUSBANDRY

The Animal Husbandry major fits students to cope with the practical problems of live-stock production and management. It supplements and supports but does not duplicate or replace the necessary experience gained only through actual manual work in caring for animals. As a foundation, the study of breed history, live-stock trends, animal anatomy and physiology is required. Special attention is given to physiological processes in breeding and feeding. Later courses show how these processes actually function under the stockman's guidance.

A herd of about 200 dairy cattle including Ayrshires, Guernseys, Jerseys, Holsteins and Milking Shorthorns, a band of about a dozen Percheron brood mares, a flock of about 60 Southdown and Shropshire sheep and a herd of about 50 Berkshire and Chester White swine together with the modern barns and equipment for housing and caring for the above live stock and a farm of several hundred acres used primarily for the production of feed crops gives ample scope for illustrating and giving practice in modern methods of live-stock handling. The farm and barns are our laboratory; the animals and accessories our equipment.

Graduates from the Animal Husbandry major for the most part secure positions as herdsmen or farm managers.

Animal Husbandry

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agromony S-1 (Soils and Fertilizers)	Animal Husbandry S-2 (Principles of Feeding)	Six months' farm placement training
Animal Husbandry S-1 (Types and Breeds)	Microbiology S-1 (Hygiene and Sanitation)	
Dairy S-1 (General Dairy)	Motors S-2	
Poultry S-1	Business Law S-1	
English S-1 (see description of Course)	Milking, Harnessing and Teaming (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Animal Husbandry S-3 (Feeding Practice)	Animal Husbandry S-4 (Herd Book Study and Animal Breeding)	Animal Husbandry S-5 (Live-stock Management and Stock Judging)
Rural Sociology S-1 (Social and Economic Problems)	Pomology S-7 (general)	Agromony S-2 (Crops)
Agricultural Engineering S-1 (Farm Engineering)	Farm Management S-1 (Farm Management and Accounts)	Veterinary Science S-1 (Animal Diseases)
Construction ¹	Agricultural Economics S-1	Vegetable Gardening S-6 (general)
	Animal Husbandry S-7 (Farm Meats) Elective	English S-3 (Elective)
	Forestry S-1 (Elective)	

Animal Husbandry S-1. (Types and Breeds.) I.

Includes a study of the history and development of the various breeds of cattle, horses, sheep and swine together with a discussion of the conditions to which each breed seems best adapted. Laboratory work consists of judging and evaluating as many rings of all the classes of farm live stock as time will permit. Textbook: Plumb, "Types and Breeds of Farm Animals."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-2. (Principles of Feeding.) II.

A study of the fundamental principles of animal nutrition, of the composition of feeding materials and their relative importance for the different classes of farm animals in New England. The latter part of the course is devoted to a study of feeding standards and to the calculation of rations for all classes of farm live stock. Textbook: Henry and Morrison, "Feeds and Feeding."

5 class hours a week.

Credits, 5.

Animal Husbandry S-3. (Feeding Practice.) I.

A continuation of S-2 showing the application of the principles of nutrition in economic live-stock production, and including the management and feeding of horses, cattle, sheep and swine of all ages. Feeding and managerial problems are assigned for outside work followed by ample classroom discussions. Prerequisites: Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Henry and Morrison, "Feeds and Feeding."

5 class hours a week.

Credits, 5.

Animal Husbandry S-4. (Animal Breeding and Herd-Book Study.) II.

Includes a study of the physiology of reproduction and of animal genetics as well as the art of breeding. Among the topics included are the Origin and Domestication of Farm Animals; Modern Theories of Heredity, Variation and Sex Determination; the Systems of Breeding — Cross-, Out-, Line-, and Close-Breeding; and the one paramount problem of animal breeding, namely, Selection. Considerable pedigree work in the student's favorite breed is also included. Prerequisites: Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Rice, "Breeding and Improvement of Farm Animals."

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

¹ Construction — Agricultural Engineering S-7 + S-3.

Animal Husbandry S-5. (Live-Stock Management, Stock Judging and Equitation.) III.

The first half of the term will be devoted to practical work in handling, fitting and judging live stock. The last half of the term will be devoted to lectures covering the feeding, selection and management of riding or cavalry horses, and practice in riding. The riding practice will consist of drills on the military field and cross-country trips, by arrangement with the Military Department. Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3, Animal Husbandry S-4.

5 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-6. (General Animal Husbandry.) II.

Consists of a general study of animal husbandry; types and market classes of live stock, breeds of farm animals, principles and practice of feeding, live-stock breeding; and management of herds, flocks and studs. Laboratory work is given in live-stock judging and management. As much detail of this broad subject is given as is consistent with time allotted. Textbook: Plumb, "A Study of Farm Animals."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Animal Husbandry S-7. (Farm Meats.) II.

This course is the complement of the production course previously given and permits the student to follow the product (beef, pork, veal and lamb) through the farm barn and feed lot to its final destination, the consumer's table. Practice is afforded in the killing, cutting and curing of beef, pork, veal and lamb. Included in this course is a trip to several large packing houses in Boston, consuming two days and costing about \$20. Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3. Textbook: Tomhave, "Meat and Meat Products."

1 class hour and 1 4-hour laboratory period a week.

Credits, 3.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

POULTRY HUSBANDRY

Seven courses are offered by this department. One is a general course designed particularly to equip the student with the fundamental principles underlying successful poultry keeping as related especially to the farm flock. The other six courses are for the student who desires to specialize in poultry culture.

There is a broad field of opportunity for adequately trained men in the commercial handling and sale of poultry and poultry products, specialists in incubation, brooding and rearing, and assistants or managers of commercial poultry farms. Good profits and wages await well-equipped men and women in these and other branches of poultry work.

This department is well equipped to offer practical instruction in poultry husbandry. Our quarters and equipment in Stockbridge Hall provide ample facilities for efficient classroom and laboratory teaching.

Our practical laboratory (college poultry plant) comprises about 1,500 adult birds, divided into some 40 pens of various designs, the flocks ranging in size from 10 to 250 birds; thirty lamp incubators, as well as four mammoth machines; brooding and rearing facilities for 5,000 chicks, including many styles of stove, kerosene and electric brooders; facilities for practice in pen management, fattening, killing, picking, caponizing, judging, mixing rations; construction of poultry houses and appliances, etc.

In addition to the actual practice work performed, the student has an opportunity to keep under observation practical experiments and demonstrations continually under way for the instruction of students and practical poultry keepers.

Poultry**FIRST YEAR**

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Poultry S-2	Six months' farm placement training
Animal Husbandry S-1 (Types and Breeds)	Microbiology S-1 (Hygiene and Sanitation)	
Dairy S-1 (General Dairy)	Motors S-2	
Poultry S-1	Business Law S-1	
English S-1 (see description of Course)	Milking, Harnessing and Teaming (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Poultry S-3	Poultry S-4	Poultry S-5
Poultry S-7 (Poultry Diseases)	Pomology S-7 (general)	Agronomy S-2 (Crops)
Rural Sociology S-1 (Social and Economic Problems)	Farm Management S-1 (Farm Management and Accounts)	Vegetable Gardening S-6 (general)
Construction ¹	Agricultural Economics S-1	Entomology S-1 (Beekeeping)
		English S-3 (Elective)

Courses in Home Economics and Agricultural Opportunities for Women may be had by arrangement

Poultry S-1. (Judging and Housing.) I.

This course embraces a study of the various economically important types and breeds of domestic fowl, judging for egg production capacity, and for exhibition quality. A visit to one Connecticut Valley poultry show may be required. This course also covers the principles and practices of constructing and equipping houses on a commercial poultry farm.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Poultry S-2. (Incubation and Brooding.) II.

A study of incubation and brooding is made by means of the operation of standard incubators and brooders and through a consideration of basic principles. Students select and grade hatching eggs; complete a hatch in small incubators and run mammoth incubators for a period of time. Under supervision each student has charge of a brood of chicks.

2 class hours and the equivalent of 3 2-hour laboratory periods.

Credits, 5.

Poultry S-3. (Feeding and Marketing.) I.

A study of the common poultry feeds, feeding principles and successful commercial farm practices. For organized practice, the feeding and management of a pen of birds for a few weeks will be required. This course also covers candling, grading and packing eggs, market classification of poultry and eggs, judging eggs, fattening, killing, dry and scald picking, drawing, shaping and packing poultry, judging of live and dressed market poultry, the requirements of various markets and relative merits of different systems of marketing. Each member of the class is required to fit entries for the Annual Market Poultry Show.

4 class hours and 2 2-hour laboratory periods a week.

Credits, 6.

Poultry S-4. (Poultry Breeding.) II.

The course includes the study of the improvement of poultry by means of mass selection, "seed-plot" and pedigree methods of breeding. Students follow through each step of a pedigree hatch and assist in the selection of the breeders used at the college plant. Basic principles of heredity necessary for an understanding of good breeding practices are studied.

3 class hours and 2 2-hour laboratory periods per week.

Credits, 5.

Poultry S-5. (Poultry Farm Management.) III.

In this course the following points are given special attention: lines upon which a well-organized poultry farm is developed, the general arrangement of plots and buildings, record keeping, accounting and advertising, and a study of surveys. A

¹ Construction — Agricultural Engineering S-7+S-3.



A Class in Egg Packing



Two-Year Course Men Testing Soil

trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit.

4 class hours and the equivalent of 1 2-hour laboratory period per week. Credits, 5.

Poultry S-6. (General Poultry Course.) II.

Poultry keeping as a national industry; its importance and geographical distribution; opportunities and possibilities in poultry culture in Massachusetts; principles of feeding; utility classification of fowl; incubation, both natural and artificial; the production and packing of hatching eggs; the baby chick industry; and brooding and rearing. Practical exercises will be closely correlated with the breeds and varieties, studies of various types and sizes of incubators, brooders, and brooder houses.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

NOTE. — Students who take course 6 must get permission from the Poultry Department to take advanced poultry courses.

Poultry S-7. (Poultry Sanitation and Disease Control.) I.

This course aims to acquaint the student with the normal hygienic conditions under which our domestic poultry thrive best. Sufficient anatomy and physiology will be given to enable the student to distinguish between normal and abnormal conditions. The nature of disinfectants and external and internal antiseptics will be stressed and the students made acquainted with the best usages both scientific and practical in conducting a sanitary program for disease prevention and control. A special effort will be made to link the sanitary, hygienic, and disease control problems with the so-called down-to-date practices in feeding, housing and general management.

3 laboratory periods, Microbiology Department.

2 class hours, Department of Poultry Husbandry.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

DAIRY MANUFACTURES

The Dairy Manufactures course is designed to fit men for positions with market milk concerns, creameries, ice-cream factories, and specialized dairy farms.

All dairy manufacturing work is given in the dairy building (Flint Laboratory), a modern building designed especially for dairy work. The building is equipped with the newest and best types of dairy and creamery machinery.

The market milk room contains two complete pasteurizing units, a clarifier, separator, milk heater, automatic bottle filler and capper, and other necessary equipment for the proper handling of market milk.

The ice-cream making room contains a brine freezer, a direct expansion freezer, and additional equipment such as is found in a modern ice-cream plant.

The room designed for cheese making is equipped with cheese vats, draining racks, presses, mixer, etc. The butter making room has various types of hand and power churns, workers, scales, and other accessories.

The separator room contains a complete collection of separators and exhibits of modern equipment and supplies for the dairyman.

The testing laboratories are well equipped with apparatus for the Babcock and Mojonnier tests.

Dairy Manufactures

FIRST YEAR

Fall Term
Agronomy S-1 (Soils and Fertilizers)
Animal Husbandry S-1 (Types and Breeds)
Dairy S-1 (General Dairy)
Poultry S-1
English S-1 (see description of Course)

Winter Term
Microbiology S-1 (Sanitation and Hygiene)
Animal Husbandry S-2 (Principles of Feeding)
Motors S-2
Business Law S-1

Spring Term
Six months' farm placement training

SECOND YEAR

Fall Term
Dairy S-2 (9 credits) (Ice-cream Making)
Microbiology S-2 (Dairy Bacteriology)
Rural Sociology S-1 (Social and Economic Problems)

Winter Term
Dairy S-3 (9 credits) (Market Milk)
Farm Management S-1 (Farm Management and Accounts)
Agricultural Economics S-1

Spring Term
Dairy S-4 (9 credits) (Butter Making and other products)
Veterinary Science S-1 (Animal Diseases)
Agricultural Engineering S-5 (Dairy Mechanics)
English S-3 (Elective)

Dairy S-1. (General Dairy.) I.

This course takes up the question of the importance of dairying in the United States, and especially in the New England States, giving the development of dairying from the earliest to the present time. It covers the secretion, composition, and properties of milk; reasons for variation in the per cent of fat in different samples of milk; the Babcock test for fat in milk and other dairy products; other common milk tests; the advantage of testing herds, cow test associations, advanced registry work; the handling of market milk; soft cheese making, ice-cream making, and butter making as applied to general farm conditions. The laboratory work consists mainly in testing milk and dairy products for butter fat, solids, and acidity, together with some laboratory work in milk handling, butter making, cheese making, and ice-cream making.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Dairy S-2. (Ice-cream Making.) I.

In this course a careful study is made of modern methods of manufacturing the common frozen dairy products (ice-cream, sherbets, and ices, also frozen puddings, punches, mousses, etc.).

The lecture work includes a discussion of the history of ice-cream making, the ingredients found in ice-cream, methods of preparing and standardizing mixes, the freezing process, methods of hardening, marketing, and distribution of the finished product.

The laboratory work involves the preparation and standardization of ice-cream mixes, the freezing of ice-cream and other frozen dairy products, and laboratory tests for butter fat and total solids in ice-cream.

4 class hours and 3 3-hour laboratory periods a week.

Credits, 9.

Dairy S-3. (Market Milk.) II.

This course takes up the history of market milk, its food value and use. Attention is given to the necessary essentials in producing a clean product; the economics of milk production; the advantages of co-operative milk producers' organization; the various methods of marketing milk; clarification; pasteurization; cooling, etc. The laboratory work consists in visiting dairy herds and city milk plants; the operation of machinery used in connection with market milk work.

4 class hours and 3 3-hour laboratory periods a week.

Credits, 9.

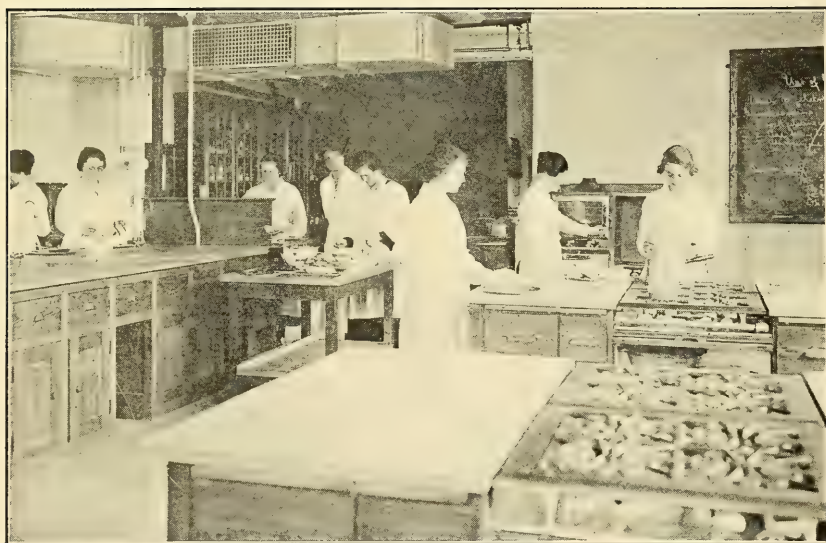
Dairy S-4. (Butter Making and Other Dairy Products.) III.

A large part of this course consists of the study of butter making; other products are, cheese and "surplus products."

Under butter making the principal factors studied are: methods of separating milk, the history, selection, care, and use of separators; the pasteurization and ripening of cream; testing cream for acidity; the making and use of starters; a study of churns and churning; modern methods of making butter; marketing butter; tests for moisture, salt, fat, and curd content of butter.



Making Butter



A Class in Cooking

Lectures are given covering the manufacture of other milk products (cheese, commercial buttermilk, casein, condensed milk, milk powder, etc.). The manufacture of hard and soft cheeses (cheddar, pimento, olive, nut, neufchatel, cottage, etc.) is considered, either from the standpoint of marketing the entire milk supply of the dairy through these products or the economic disposal of surplus milk.

The laboratory work covers the operation of separators and churns, the making of butter, cheese, commercial buttermilk, etc.

4 class hours and 3 3-hour laboratory periods a week.

Credits, 9.

GENERAL HORTICULTURE

The object of this course is to train men for positions as superintendents or foremen on parks or on private estates, or as foremen for landscape gardeners, or for private practice in horticulture service, including so-called tree surgery, city forestry and golf grounds.

Ample classrooms and laboratories with necessary equipment are provided for all work that must necessarily be done indoors. The extensive college campus, with its stretches of lawn, its plantings of trees, shrubs, and vines, its drives and walks, furnishes an outdoor laboratory where the student will be brought into personal relation with problems comparable in every way with those that arise in the management of a park, private estate, etc. Work with various types of horse power, motor power and hand machinery and implements will give him practical knowledge of their use, care, and application. A growing nursery furnishes opportunity for the propagation and culture of those plants used in ornamenting grounds, the transplanting of these about the grounds in compliance with prepared landscape plans, and their subsequent care, including proper methods of pruning.

Horticulture

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Horticulture S-1 (Plant Propagation)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Horticulture S-2 (Plant Materials)	
Pomology S-7 (General Course)	Motors S-2	
Vegetable Gardening S-1	Business Law S-1	
English S-1 (see description of Course)	Teaming and Harnessing (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Horticulture S-4 (Principles of Plane Surveying)	Forestry S-1 (Woodlot Management)	Horticulture S-3 (Plant Materials)
Horticulture S-7 (Park and Estate Maintenance)	Horticulture S-5 (Drawing and Mapping)	Horticulture S-6 (Surveying and Plan Making)
Horticulture S-9 (Golf course Maintenance)	Horticulture S-10 (Golf-Course Maintenance)	Horticulture S-8 (Construction and Maintenance)
Horticulture S-12 (Care of Plant Materials)	Horticulture S-13 (Plant Breeding)	or
Pomology S-8 (Small Fruits)		Horticulture S-11 (Varieties of Greens Grasses and Their Culture)
		Floriculture S-7 (The Use of Herbaceous Plants)
		English S-3 (Elective)

Horticulture S-1. (Plant Propagation.) II.

This course sets forth the principal and best methods used in reproducing and increasing the number of those plants cultivated in the various branches of horticulture.

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

Horticulture S-2. (Plant Materials.) II.

The object of this course is to learn to know the trees, shrubs and vines used in ornamental plantings. Special consideration will be given to their individual characteristics as indicated in their fruits, dormant twigs and habits of growth.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-3. (Plant Materials.) III.

A continuation of Horticulture S-2 giving special attention to the foliage characters of evergreens; also a study of the association of various species of plant materials in group plantings.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Horticulture S-4. (Principles of Plane Surveying.) I.

Outdoor practice in the use of simple surveying instruments, as tapes, compasses and levels used in the measurement of land surfaces. Lectures will include explanation of construction and theory of instruments.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Horticulture S-5. (Drawing and Mapping.) II.

This course deals with practice in elementary drafting, using various types of instruments and materials. Use will be made of the notes taken in Horticulture S-4, in the study of contour maps, grading plans, house lots and gardening problems. Practice will be given in the reading and interpretation of typical maps and plans.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-6. (Surveying and Plan Making.) III.

In this course there will be an application of the methods studied in Horticulture S-4 and S-5 to the mapping of small areas, house lots, garden and park areas, road and walk construction, staking out areas from plans, grading work and simple garden construction problems.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Horticulture S-7. (Park and Estate Maintenance.) I.

The work of this term will deal with construction and maintenance of roads and walks, especially such roads as are typical to parks and estates, proper foundations and drainage being emphasized; systems of cost keeping for parks and estates and actual cost records analyzed; relationship between superintendent and laborer; and the entire problem of lawn grass seed, illustrated by growing plots of the more common varieties. Throughout the term there will be laboratory exercises pertinent to the typical fall problems.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-8. (Construction and Maintenance.) III.

In addition to the routine spring problems special emphasis will be made upon the proper cultural methods for lawn building and maintenance. A careful study of all equipment will be made this term.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-9. (Golf-Course Maintenance.) I.

While this course will not teach golf-course designing, the fundamentals of good designs will be carefully studied. Fall maintenance problems will be practiced and studied.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-10. (Golf-Course Maintenance.) II.

This is a practical course for greenskeepers; seeding, drainage, soils, costs, water systems, grasses and grass seed and equipment.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.



Pruning Raspberries



Learning to Spray

Horticulture S-11. (Varieties of Greens Grasses and their Culture.) III.

The identification of grasses in turf will be required. The effects of fertilizers on various grasses studied and fertilizer method practiced. Two putting greens will be put into playing condition and maintained. Two large demonstration plots will be used in connection with this course.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Horticulture S-12. (Care of Plant Materials.) I.

This course deals with the care of woody ornamental plants under the following heads: planting, pruning, maintenance of soil fertility, winter protection and tree-surgery.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Horticulture S-13. (Plant Breeding.) II.

This course considers the origin of cultivated plants, the problems and methods of the plant breeder in the improvement of horticultural varieties, and some of the basic principles of inheritance on which plant improvement is based.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Excursions.

For Horticulture S-7 a one-day excursion to estates in Berkshire County. Estimated cost \$5.00.

For Horticulture S-11 a two-day excursion to the eastern part of the state visiting golf courses and greenskeepers. Estimated cost \$15.00.

These excursions will be required.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

POMOLOGY

This course is arranged to give the student a sound practical knowledge of fruit growing and allied subjects. Graduates who are capable and experienced have advanced rapidly to positions of responsibility in some of the larger orchards of New England, and the demand is active for good men in that field.

Some graduates of this course have gone into business for themselves, establishing successful orchards of their own, or pruning, spraying and otherwise caring for a number of small orchards, the owners of which are not prepared to do their own work. Still others are packing house foremen or are engaged in some other marketing activity. The fruit-growing industry of New England is developing rapidly and the opportunities are excellent for good men who are well trained.

Practical work in the orchards under expert supervision is emphasized where possible. It is intended to familiarize students with the best methods that have been devised by experiment stations and leading fruit growers for the production and marketing of high quality fruits under New England conditions. The Department of Pomology has about fifty acres of fruits easily accessible from the classroom, and the orchards are used freely for purposes of instruction. All the common tree fruits and small fruits are grown here on a commercial scale. Many experiments and demonstrations are in progress in the plantations, offering an exceptional opportunity to the student.

A good equipment is maintained of the principal types of orchard tools and machines. Such implements as sprayers, nozzles, pruning saws, pruning shears, ladders and cultivators are available in great variety for study and trial by students.

Pomology**FIRST YEAR**

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agromony S-1 (Soils and Fertilizers)	Pomology S-2 (Orchard and Vineyard Pruning)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Horticulture S-1 (Plant Propagation)	
Pomology S-1 (Orchard Production)	Construction ¹	
Vegetable Gardening S-1	Business Law S-1	
English S-1 (see description of Course)	Teaming and Harnessing (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Pomology S-3 (Harvesting and Marketing)	Rural Sociology S-1	Pomology S-5 (Spraying)
Pomology S-4 (Fruit Varieties)	Agricultural Economics S-1	Pomology S-6 (Orchard Management)
Horticultural Manufactures S-1	Poultry S-6 (general) ²	Agromony S-2 (Crops) ²
Dairy S-1 (general)	Animal Husbandry S-6 (general ²)	Motors S-2 ²
	Forestry S-1 ²	Entomology S-1 (Beekeeping) ²
	Horticultural Manufactures S-2 ²	Horticultural Manufactures S-3 ²
		English S-3 (Elective)

Pomology S-1. (Orchard Production.) I.

This course covers the planting and development of young orchards and the management of bearing plantations to produce high-grade fruit. Sites and soils for each of the tree fruits are discussed and the preferences of certain varieties for particular types of soils are studied, to guard against serious mistakes in planting. The best methods are considered for laying out orchards and for setting trees to insure a proper start. The handling of young trees to bring them into early profitable bearing is given special attention.

The culture of bearing plantations is studied in detail to give an understanding of the factors that influence yields and quality of fruit. Methods of soil management are discussed with their adaptation to common soil types and with reference to their advantages and limitations. The experimental plots afford exceptional opportunities to study cultural methods and many subjects are discussed in the orchards.

5 class hours a week.

Credits, 5.

Pomology S-2. (Orchard and Vineyard Pruning.) II.

Fruit plantations may be damaged more by unintelligent pruning than by mismanagement in any other single operation. If the orchardist does not know that apple trees bear on spurs, he is very likely to cut them off in pruning, and so reduce his chances for a crop. If he is ignorant of the fact that the peach bears on last year's wood, he may remove most of this wood, and incidentally most of his crop. This course aims to give the student a thorough training in the theory of pruning and the methods of bearing of the different fruits.

At the same time, every student is required to prune in the college orchards and vineyards until he becomes reasonably proficient with each kind of fruit.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-3. (Harvesting, Packing, Storing, Marketing.) I.

Handling the crop to the best advantage is one of the most important things in successful fruit growing and one which too often is badly managed because the fundamental principles are not understood. The proper time for harvesting is discussed in this course as well as the most satisfactory methods to insure a maximum storage season.

Particular attention is given to packing apples in boxes and barrels, and practice is continued under supervision until the principles are mastered. Many other

¹ Construction — Agricultural Engineering S-7+S-4.

² Elect two subjects.

packages are packed and studied also in relation to the movement of the New England apple crop.

The principles of common and refrigerated storage are considered in detail and storage house construction under New England conditions is discussed, with a critical examination of several storages in use on or near the campus.

The competitive position of New England in the apple market is studied in relation to market demands and attention is given to export markets and to cities outside of New England. Modern methods of marketing are considered with special reference to developing local markets and to co-operation in handling New England apples.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-4. (Fruit Varieties.) I.

One of the most prolific causes of failure in the fruit business is the growing of wrong varieties; varieties requiring a dry soil are set in a wet soil; tender varieties are set in a wet soil or where only hardy ones should be used; quality, productiveness, and season of ripening are ignored; and varieties are set which might be excellent in Ohio or Virginia or Missouri, but which cannot be grown profitably in Massachusetts.

This course aims to lay the foundation for a better state of things. The student is given a thorough drill on varieties of different fruits and has an opportunity to test personally many of the leading varieties, especially of apples.

5 class hours a week.

Credits, 5.

Pomology S-5. (Spraying.) III.

In this course a careful study is made of modern methods of spraying. All the principal spray materials are studied, and the student is given practice in their preparation for use and in applying them to the orchard.

The department is well equipped with modern spraying apparatus, from bucket pumps to large power outfits, and students are required to study the construction of these pumps, and to operate them in the orchards.

Spraying is very properly regarded as one of the most important operations in connection with growing fruit, and it is the aim of this course to train students to recognize the work of our common orchard pests, to prepare the proper materials for their control, and to apply them efficiently.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-6. (Orchard Management and Small Fruits.) III.

The work in orchard management includes a detailed study of such questions as the planning and laying out of fruit plantations so that they may be handled most economically; the cost of various operations, and methods of reducing expenses; efficient handling of labor on fruit farms; the use of labor-saving devices in fruit work; the most economical units in fruit production.

While orcharding will always be the leading phase of fruit growing in Massachusetts, there are many unusual opportunities for success in growing the various small fruits. This course deals with the problems of establishing and handling successfully plantations of strawberries, raspberries, blackberries, currants, gooseberries, and grapes, including such questions as the choice of varieties; the best types of soils; laying off and setting the plantation; the proper fertilization; and methods of pruning and training. The college has large plantations of most of these fruits, so the student has ample opportunity for a wide range of practical work. The aim is to make the course of the utmost practical value, as well as to give the scientific principles on which practices are based. Each student must be prepared to take a trip to one of the fruit sections of the northeastern United States, at a cost of \$15 to \$25.

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

Pomology S-7. (General Course.) I, II.

This course is intended to meet the needs of students in the Animal Husbandry and Poultry majors who cannot devote more than one term to the subject of Pomology. It deals with the practical side of the growing and marketing of fruits. Special attention is given to such questions as selection of site for the plantation, choice of varieties, grafting and budding, spraying, pruning, cultivation and cover crops, fertilizing the fruit plantation, packing and marketing.

3 lectures and 2 2-hour laboratory periods a week.

Credits, 5.

Pomology S-8. (Small Fruits.) I.

This course is designed for those students who are not majoring in Pomology but wish to make a special study of the various small fruits.

In a section like New England, with its excellent local markets, there are many farms and some whole sections where some of the small fruits may be made a very profitable part of the farm operations.

The course will include a detailed study of strawberries, raspberries, blackberries, currants and grapes, dealing with all the essential problems in establishing and maintaining such plantations, including such questions as the choice of site, selection of varieties, setting the plants, fertilizing, pruning, spraying, culture, harvesting and marketing.

The Pomology Department has commercial plantations of most of these fruits where the student will be given actual practice in all of the operations studied, so that he may become familiar with the practical details of handling such fruits.

Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

FLORICULTURE

Students who complete the course in floriculture are fitted primarily for work in commercial and private estate greenhouse establishments and retail flower stores. After gaining experience, such students may be able to start in business for themselves. With the courses in general horticulture they should also be qualified for positions on private estates, in parks, or in nurseries.

The offices and classrooms of the Department of Floriculture are located in French Hall. Of the two lecture rooms, one will accommodate 40 students, the other 90 students; a laboratory, equipped with slate-covered tables, will accommodate 40 students. In the basement of the building the department has a specially prepared room for bulb storage, a fertilizer and tool room, and a large room for general storage purposes.

The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall, range of 7,200 square feet, a durable, practical commercial range, composed of palm and fern, sweet pea, carnation, rose, and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet, suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has 2 acres of land used for the summer culture of carnations, gladioli, dahlias, sweet peas and bedding plants; a perennial garden, an annual garden and a rose garden.

Floriculture**FIRST YEAR**

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Floriculture S-2 (Greenhouse Construction and Management)	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Horticulture S-1 (Plant Propagation)	
Pomology S-7 (General Pomology)	Construction ¹	
Vegetable Gardening S-1 (Garden Farming)	Business Law S-1	
English S-1 (see description of Course)	Teaming and Harnessing (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Floriculture S-3 (Commercial Floriculture)	Floriculture S-4 (Commercial Floriculture)	Floriculture S-7 (Uses of Herbaceous Plants)
Floriculture S-5 (Conservatory Plants)	Horticulture S-2 (Plant Materials)	Horticulture S-3 (Plant Materials)
Floriculture S-6 (Floral Arrangement)	Rural Sociology S-1 (Social and Economic Problems)	Motors S-2 or Entomology S-1
Horticulture S-12 (Care of Plant Materials)	Vegetable Gardening S-4 (Vegetable Forcing)	Horticulture S-8 (Construction and Maintenance)
		English S-3 (Elective)

Floriculture S-1. (Garden Flowers and Bedding Plants.) I.

This course is intended for students who will take up private estate work or who will specialize in floriculture. It will include a study of the annuals, biennials, herbaceous perennials, and bedding plants which are commonly used in commercial floriculture and in private estate work. Methods of propagation, culture and uses will be considered. Laboratory exercises will include work in propagation, planting, study of materials, and planning of beds and borders.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Floriculture S-2. (Greenhouse Construction, Heating, and Management.) II.

This course will take up the origin, growth, and importance of the floriculture industry; development of the greenhouse; types of houses and construction; methods of greenhouse heating; general principles of greenhouse management, including soils and their preparation, fertilizers, watering, ventilation, and fumigation; methods of propagation for plants grown under glass. Trips are taken to visit greenhouse establishments in the vicinity of Amherst at a total approximate cost of two dollars. Textbook: White's "Principles of Floriculture."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Floriculture S-3. (Commercial Floriculture.) I.

Courses S-3 and S-4 will be devoted primarily to a consideration of the important commercial crops. Special attention will be given to the culture (under glass) of roses, carnations, chrysanthemums, violets, and sweet peas. Other cutflower crops and various potted plants will also be considered. All members of the class are required to take a one-day trip to visit a large commercial greenhouse establishment at an approximate cost of five dollars each. Textbooks required during the two courses will be: Holmes, "Commercial Rose Culture"; and Smith, "Chrysanthemum Manual."

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Floriculture S-4. (Commercial Floriculture.) II.

A continuation of Floriculture S-3.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

¹ Construction — Agricultural Engineering S-7+S-4.

Floriculture S-5. (Conservatory Plants.) I.

A study of the plants, both foliage and flowering, which are used in conservatories and in decorative work. Methods of propagation, culture, uses, and identification of plants will be included in the work. Trips are taken to visit the conservatories at Smith and Mount Holyoke colleges at slight expense.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Floriculture S-6. (Floral Arrangement.) I.

A study of the principles underlying the use of flowers in funeral designs and sprays, table decorations, corsages, vase, bowl and basket arrangements; decorations for public functions; study of color with regard to such work. Limited to students who are majoring in floriculture. Textbooks: White, "Principles of Flower Arrangement"; Harry, "Manual of Floral Designing".

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Floriculture S-7. (The Use of Herbaceous Plants.) III.

This course is a continuation of Floriculture S-1 and is intended for students specializing in floriculture and general horticulture. It provides opportunity for a more detailed study of many of the plants considered in the preceding course, with especial emphasis on their uses in gardens and in other types of landscape planting. Lectures, assigned readings, study and identification of plants, planning of borders and gardens.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

VEGETABLE GARDENING

The business of vegetable growing is one of the leading types of agriculture in Massachusetts. Middlesex County is surpassed in the value of vegetables grown for sale by only four other counties in the United States. The value of vegetables grown for home use in Massachusetts is more per farm than in any other State in this country. The vegetable greenhouse district around Boston is one of the largest in the United States, and the only district growing head lettuce under glass. The Massachusetts markets for vegetables are considered by many to be among the best, for we are further removed from the large vegetable trucking sections than other large centers of population, while our markets demand high-quality vegetables.

The two-year course in Vegetable Gardening is designed to prepare men to go into business for themselves as market gardeners, truck farmers, and greenhouse vegetable growers. For those whose principal interest may lie in other fields of agriculture the course has much to offer along the lines of special crops, often spoken of as cash crops. For those who wish to work for someone else this course offers training such that its graduates are being placed in responsible positions with commercial vegetable growers, seed growers, and on private estates.

Vegetable Gardening

FIRST YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Agronomy S-1 (Soils and Fertilizers)	Vegetable Gardening S-2	Six months' farm placement training
Floriculture S-1 (Garden Flowers and Bedding Plants)	Construction ¹	
Pomology S-1 (Orchard Production)	Business Law S-1	
Vegetable Gardening S-1	Pomology S-2 (Orchard and Vineyard Pruning)	
English S-1 (see description of Course)	Teaming and Harnessing (Required)	
Tractor Practice (Required)		

SECOND YEAR

<i>Fall Term</i>	<i>Winter Term</i>	<i>Spring Term</i>
Vegetable Gardening S-3	Vegetable Gardening S-4	Vegetable Gardening S-7
Pomology S-3 (Harvesting and Marketing)	Rural Sociology S-1	Pomology S-5 or
Pomology S-4 (Fruit Varieties)	Poultry S-6 (general) ²	Pomology S-6
Horticultural Manufactures S-1	Agricultural Economics S-1	Motors S-2
	Horticultural Manufactures S-2 ²	Horticultural Manufactures S-3
		or
		Entomology S-1 (Beekeeping)
		English S-3 (Elective)

The business of vegetable gardening may be undertaken with a limited outlay of capital, for the returns on the capital invested are quickly secured. Some vegetable crops mature in a very few weeks, thus enabling one to turn over his capital from one to three times per season. The nature of this business is such that one locates as near the market as possible, and because of the growth of our cities, vegetable growers, as a group, have profited much by an increase in land values.

The Vegetable Gardening Department has 10 acres of land, 3,500 square feet of greenhouse space, and 500 linear feet of hotbeds and cold frames. These are used to give the student thorough practical training in the fundamentals of vegetable growing, plant production, and vegetable forcing. The office, classroom and laboratory are located in French Hall.

Vegetable Gardening S-1. (Garden Farming.) I.

Students will find this course one which will fit them to carry on estate work, to make the best use of the farm home garden, or to go on with commercial vegetable growing. The student will work with the leading types of the common vegetables, learning their requirements. Special attention will be given to the harvesting and storage of crops for winter and fall preparation of the land.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-2. (Fundamentals of Vegetable Growing.) II.

A study of the general conditions influencing the growth of vegetables. The classroom and laboratory work aims to acquaint the student with the general problems of water requirements, nutritional requirements, and miscellaneous climatic factors and their effects on the growth and cultural methods employed in vegetable production. Special care will be given to acquaint the student with the importance of detail, so that he will be able to make the best of the six months' training with some one of the leading vegetable growers in Massachusetts.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-3. (Types and Varieties.) I.

Success or failure in vegetable production depends upon the proper selection of types and varieties. Market demands differ in different sections, and there is a difference in the types produced from various seed sources. This department maintains a variety garden, growing some 250 or more varieties of vegetables, so as to train the student in the proper selection of types and varieties. Study is

¹ Construction — Agricultural Engineering S-7+S-4.

² Elect two subjects.

given to the source and desirability of good seed. The importance of high quality and good appearance of vegetables is kept before the student so that he will be fitted to judge and exhibit vegetables.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-4. (Vegetable Forcing.) II.

The demand is increasing for fresh vegetables out of season, and Massachusetts markets are among the best for such products. This course meets a real demand by giving the student training in the production of vegetables out of season. There is a demand for the men with this training. The student will study the latest and best methods of caring for greenhouse crops.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-6. (Vegetable Crops for the General Farm.) III.

Many of the vegetable crops are of such a nature that they can be successfully grown as a side line to other types of farming. Special emphasis will be given to those crops which the men interested in animal husbandry can use for a money crop or for stock-feeding purposes. The farm home garden is important for any farm, and here in this State the yield from such gardens is greater than in other States. As the area on the general farm devoted to vegetables is one of the most productive in money value, this course will show the student how to make the best use of this farm home garden.

3 class hours, 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-7. (Problems in Commercial Vegetable Gardening.) III.

In order to understand the best methods of growing vegetables on a commercial scale, the student must be acquainted with the principles underlying these practices.

Weekly assignments dealing with specific problems as encountered in the actual business of growing vegetables commercially are worked out by the students. Such problems as geographical factors affecting the industry, weather, market reports, the purchase of seeds, fertilizers and equipment, the study of various forms of machinery used by the market gardener, and the control of injurious insects and diseases are included in this course. Organized trips through the Connecticut Valley and one trip through the market gardening section near Boston are required. This latter trip requires about four days and costs each student approximately fifteen dollars.

1 2-hour class period and 4 1-hour outside laboratory periods per week. Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

GENERAL COURSES FOR WOMEN

There was offered in the fall of 1922, for the first time, a general course for those young women who do not want to specialize in any one branch of agriculture, but who do want preparation for rural life. This course includes such agricultural and home economic courses as the country girl would be most likely to use, both for profit and for pleasure. This course should appeal to many young women whose home is on a farm or in a small town; or those who hope some time to live in the country.

General Course for Women

FIRST YEAR

Fall Term

Agronomy S-1
 Floriculture S-1
 Home Economics S-1
 Agricultural Opportunities for Women S-1
 Physical Education S-1 (Required)
 English S-1 (see description of Course)

Winter Term

Horticulture S-1
 Home Economics S-2
 Home Economics S-3
 Microbiology S-1 (Sanitation and Hygiene)
 Physical Education S-2 (Required)

Spring Term

Six months' farm placement training

SECOND YEAR

Fall Term

Agricultural Economics S-1
 Horticultural Manufactures S-1
 Dairy S-1 (general)
 Agricultural Engineering S-3 (Household Mechanics)
 Physical Education S-3 (Elective)

Winter Term

Poultry S-6 (general)
 Pomology S-7 (general)
 Animal Husbandry S-6 (general)
 Home Economics S-4

Electives:

Horticultural Manufactures S-2
 Rural Sociology S-1
 Physical Education S-4

Spring Term

Horticultural Manufactures S-3
 Vegetable Gardening S-6 (general)
 Home Economics S-5 (House Furnishing)
 Entomology S-1, or —
 Floriculture S-6, or —
 Poultry S-5
 English S-3 (Elective)

RELATED SUBJECTS IN OTHER DEPARTMENTS

Agricultural Economics S-1. (Marketing.) II.

The purpose of this course is to present the business side, or economics of agriculture. It is based upon the principle that goods are made to sell, and that the real object of production is adequate money return. The course deals with the importance and place of the agricultural industry in national development, and specifically with the types of profitable commercial agriculture in New England.

The problem of the marketing of farm products is treated in an extremely practical manner. The aim of the course is to co-ordinate the marketing practice with which the student has already become familiar during his placement training, or has used on his home farm, with the accepted principles and practices of farm marketing. Some of the topics discussed are marketing as a part of production; the principles of marketing; the methods of wholesale distribution; the methods of sale; the prices of farm products; government aids in marketing; co-operative buying and selling; the successful advertising of farm products; the principles of farm credit. Each student will be required to select some product of major interest to him and make a careful study of its production, handling and marketing.

The laboratory period is devoted to the graphic presentation of certain facts with regard to agricultural producing areas; the prices obtained over a period of years, and on different markets, for specific products; the writing of copy for agricultural advertisements; and other similar problems. It also aims to familiarize the student with the methods of keeping graphic records or charts of income or other data which are reducible to a time series.

During the term there will be a two-day marketing trip to the Boston market, for the purpose of studying at first hand the methods of handling products on the farmer's market; the use of the Produce Exchange; the cold storage system; the auction as a method of sale; the exporting of farm products; etc. The approximate cost averages from \$10 to \$12.

Lectures, textbook, laboratory period, quiz section, and term paper.

5 class hours a week.

Credits, 5.

Department of Agricultural Economics.

Agricultural Engineering S-1. (Farm Engineering.) I.

This course is intended to familiarize the student with the various types of farm implements, to teach him their operation and care, and give practice in the adjustment and repair of the mechanical equipment on the farm.

The various types of field implements are studied, and emphasis is laid on the selection of implements suited to New England conditions. The adjustment of machines is discussed and the student is given practice in setting machines for different field conditions.

Part of the course is given over to the repair of farm equipment. In this work part of the time is given over to blacksmithing and the balance to such exercise as soldering, babbitting and fitting bearings, lining up shafting, pipe fitting, threading bolts and nuts, and practice in tying knots and splicing rope. Farm implements are brought in and overhauled to give practical work in this line. In the limited time available it is not expected to make a blacksmith or mechanic out of the student, but it is hoped that the student will learn to know the tools used and get sufficient practice in their use so that he can make repairs on his own equipment.

Part of the course is given over to the study of water supply systems, including pumps, rams, and complete power systems. Farm-lighting plants are also studied, attention being given to selection, as well as care and operation. The principles underlying the practice of farm drainage are discussed, and practice is given in the use of simple leveling instruments for the purpose of accurately grading tile drainage ditches.

2 lectures and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-2. (Farm Motors.) II, III.

This course deals with the gasoline engine as used for stationary work, automobiles, and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-3. (Carpentry.) I.

This course gives practice in the care and use of carpenters' tools through bench work, repair of farm equipment, and building construction. Small buildings are erected by the students to give practice in all the phases of house construction. Practice is given in the building of forms and in the mixing and placing of concrete. (Must be taken with Agricultural Engineering S-7.)

2 2-hour laboratory periods a week.

Credits, 2.

Department of Agricultural Engineering.

Agricultural Engineering S-4. (Repair of Farm Equipment.) II.

The object of this course is to give practice in the handling of tools, which will help in the repair of farm machines and miscellaneous farm equipment. Practice is given in forging, including drawing and shaping iron and steel, welding and tempering edged tools, and general blacksmith's repairing. Exercises also include pipe fitting, soldering, splicing rope, belt lacing, and babbitting and adjusting bearings. Practice is given in the use of machinists' tools, such as cold chisel, file, taps and dies, drill press, and lathe. (Must be taken with Agricultural Engineering S-7.)

2 2-hour laboratory periods a week.

Credits, 2.

Department of Agricultural Engineering.

Agricultural Engineering S-5. (Dairy Mechanics.) III.

This course is planned for men who are fitting themselves to take charge of dairy plants or allied lines of work. A study of steam boilers, steam engines, steam turbines, pumps, steam traps, line shafts, belting, electric motors, milking machines, and refrigeration plants.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Engineering S-7. (Farm Structures.) I, II.

A study of the building materials commonly used in farm construction; details of construction and simple structural mechanics; the principle of design of such farm buildings as the dairy stable, hog house, horse barn, general purpose barn, poultry house, fruit and vegetable storage buildings, etc.

In the drafting room practice will be given in the use of drawing instruments, and instruction given in the fundamentals of drawing. Each student will have opportunity to design in complete detail one of the major farm buildings in which he is particularly interested. (Must be taken with Agricultural Engineering S-3 or S-4.)

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Department of Agricultural Engineering.

Agricultural Engineering S-8. (Household Mechanics.) I.

A study of house planning, heating, lighting, water supply, and sewage disposal. Practice will be given in the care and repair of household appliances.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Agricultural Engineering.

Agricultural Opportunities for Women S-1. I.

Agriculture is a field in which women are finding increasingly good opportunities.

The particular problems which the women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

2 class hours a week.

Credits, 2.

MISS HAMLIN.

Agronomy S-1. (Soils and Fertilizers.) I.

All agricultural interests are vitally concerned with the soil and its adaptation and management for plant production. This course treats of the selection of suitable soils for the different purposes of agriculture, horticulture and floriculture, and with the management of soils as regards moisture control, tillage, organic matter, soil bacteria, manure, lime and fertilizer. The laboratory work gives training in the use and interpretation of the maps of the soil survey, in tests of soil texture, organic matter and acidity and in the identification of fertilizer materials. The composition and use of fertilizers will be studied and practice given in the calculation of fertilizer formulas. Practical field work will be given in judging the adaptation and value of soils, and field demonstration of the use of the tillage tools of the college farm.

As a field project the student will be required to make a study of some farm, nursery or florist's plant. This project includes a survey of the soil conditions and methods of soil and crop management, and recommendations based on a thorough analysis of the system from the soil up.

3 class hours, and 2 3-hour laboratory periods per week.

Credits, 5.

Agronomy Department.

Agronomy S-2. (Field Crops.) III.

This course is planned to acquaint the student with the best and most successful practices of production and harvesting of field crops. Problems usually arising in connection with these practices will be studied. Special attention will be given to the hay crop, corn, potatoes, roots, and pastures. Field work with growing crops and laboratory work in the identification of seeds of grasses, clovers, weeds and small grains, in tests of purity and germination of seeds and judging of different types of corn and potatoes will be given. Before completing the course the student will be expected to know how to select varieties, test seed, prepare the soil, select and apply fertilizer, plant, cultivate, harvest and store the field crops important in Massachusetts.

2 class hours, and 3 2-hour laboratory periods.

Credits, 5.

Agronomy Department.

Business Law S-1. II.

Required for freshmen. To consist of a particular study of the contract, drawing, reading and interpreting the same; the sale; and problem work. Other branches of the law such as deeds, mortgages, corporations, partnerships, com-

mercial paper, torts and personal rights explained and presented by lectures during the course. Particular stress is placed on the reasoning process.

5 hours a week.

Credits, 5.

English Composition S-1. I.

Required for freshmen with less than two full years of high school preparation, or its equivalent; and elective for others. To consist of directed readings (one book or its equivalent per week); essay writing (one short essay, book report, personal or business letter, or writing of a similar nature per week); and an oral presentation (a five-minute address or talk on an assigned topic to be prepared for each week, and as many heard as time permits).

3 hours a week.

Credits, 3.

English Composition S-3. III.

Required of seniors interested in dramatic presentation and elective for the rest. This course is in continuation of the freshman course; but lays particular stress on the drama and dramatic presentation. (All dramatic presentation endeavored by the Two-Year Course, or other short courses to be under the direction of the instructor in English Composition.)

3 hours a week.

Credits, 3.

Entomology S-1. (Beekeeping.) III.

This course comprises a general consideration of the biology of the honey bee and the elements of practical beekeeping. This includes the life history of the individuals and their relation to the colony, structure, their normal behavior and instincts, and the relation of bees to horticulture and other forms of agriculture. The best methods of management, which will produce more productive colonies for pollination purposes and honey production, are studied. Consideration is given to the economic side of beekeeping, which also includes methods of marketing, disposal of by-products, and bee disease control. As far as possible, the work is made individual in constructing materials and apparatus and in the manipulation of bees.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Entomology Department.

Farm Management S-1. (Farm Management and Accounts.) II.

A study of farming as a business; the correlation and adaptation of different farm enterprises, as dairy, orchard, poultry, to the specific farm; land, labor, and capital requirements; farm and building, plans and arrangements; the choice and purchase of a farm. Several laboratory periods will be devoted to practice in farm accounting. Farm experience and the keeping of a personal expense account during the period of placement training are prerequisites of this course.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Farm Management Department.

Forestry S-1. (Woodlot Management.) II.

A course in tending, harvesting, marketing, and renewing the forest crop, with particular reference to the problems of the farm woodlot. The instruction is mainly practical, and is conducted in the field, with a minimum of bookwork; but there is a constant emphasis upon the development of keen and imaginative observation, and the acquisition of the conservationist point of view. Opportunities for field work are varied and extensive. There are woodlots of several types on or near the campus, and students have the fullest use of the Mt. Toby Demonstration Forest, a 750-acre tract 7 miles distant, belonging to the college and managed by the Forestry Department.

2 class hours and 1 4-hour and 1 2-hour field periods a week.

Credits, 5.

Forestry Department.

Home Economics S-1. (Clothing.) I.

This course is based on the need of good judgment in the selection of clothing, both ready made and home made. It includes a study of fabrics, their cost, value, manufacture and suitable use; of ready-made and homemade garments; and of design, color and general appropriateness and becomingness of clothing. Some garments are made in the laboratory. One or more trips to textile mills and stores are included in the course.

Estimated cost of materials used in laboratory \$5.00-\$10.00.

Estimated cost of trips \$1.50.

2 class hours and 2 3-hour laboratory periods a week.

Credits, 5.
Miss TUCKER.

Home Economics S-2. (Foods.) II.

This course aims to teach wise food selection and methods of preparation which are attractive, but which conserve food values. The use of a few basic principles in food preparation and serving, and in meeting nutritional needs will be stressed. Special study will be made of the body needs of persons of different ages and activity, and of the choosing of foods to meet these needs.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.
Miss KNOWLTON.

Home Economics S-3. (Health and Home Nursing.) II.

In this course emphasis is placed upon personal hygiene as a means of maintaining and improving health in the home. This will include ways of living to prevent sickness, the care of the family in case of unavoidable sickness, and the right attitudes toward health.

5 class hours a week.

Credits, 5.
Miss SKINNER.

Home Economics S-4. (Home Management.) II.

This course includes a study of the organizing and simplifying of methods of housekeeping; standards of living and family expenditures; the use of leisure time; family and community relationships.

5 class hours a week.

Credits, 5.
Miss SKINNER.

Home Economics S-5. (Home Furnishing.) III.

This course emphasizes the importance of attractive surroundings in creating a happy home life. It aims to develop good judgment and right standards in the selection of home furnishings. The discussions include the basic principles of good design, the use of color, the treatment of walls, floors and windows, and the choice, cost and arrangement of all types of furnishings found in the average home.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.
Miss TUCKER.

Horticultural Manufactures S-1. I.

The utilization of culls and low grades of fruits and vegetables is becoming a more important problem each year. Producers should be able to market their whole crop at a profit. The general problems studied in this course will be: the manufacture of apple products from cull apples; the canning of all fruits and vegetables available at this season, together with the manufacture of their various products, such as jams, jellies, conserves, pickles, etc.

Students will be required to keep accurate costs of materials in all canning and manufacturing operations together with a record of methods used.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.
Department of Horticultural Manufactures.

Horticultural Manufactures S-2. II.

This is a continuation of Course S-1. The preservation of small fruits together with the manufacture of their products; the evaporation of fruits and vegetables, and the manufacture of fruit syrups are the principal subjects studied. Prerequisite: Horticultural Manufactures S-1.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Department of Horticultural Manufactures.

Horticultural Manufactures S-3. III.

This is a continuation of Horticultural Manufactures S-1 and S-2. The manufacture of maple products, fermented pickles, and the canning of spring vegetables will be the principal subjects studied. Students will be given opportunity to make special studies along the lines of their greatest interest. Prerequisites: Horticultural Manufactures S-1 and S-2.

2 class hours and 3 2-hour laboratory sessions per week.

Credits, 5.

Department of Horticultural Manufactures.

Microbiology S-1. (Hygiene and Sanitation.) II.

Deviation from health, from the normal being, is disease. The human body is susceptible to deviation from health. Certain elements are responsible for the entrance of disease into the body. The body becomes weakened through exposure, lack of exercise, unsuitable food, abuses. Under such circumstances it lays itself open to attack. There is the attack from within, which consists of some organic derangement, and the attack from without, which makes it possible for foreign enemies, agents, or micro-organisms to enter.

Closely associated with the production of disease are intermediaries and casual factors, as ventilation, water-supplies, sewage disposal, and food. They serve as vehicles for disease agents. The germs of disease find their way through them, and are carried by them. Besides, human contact seems to be the most important disseminator, and insects and animals may harbor or convey, and in some instances instigate, disease.

Then there are those conditions which react on the body in a physical manner and influence its mechanism and its operating facilities, as mental disturbances, character of food, conditions of living.

It is the purpose of this course to discuss the nature of diseases, what causes them, the significance of sanitation and hygiene in preventing them, and the methods of control; in other words, to study, in the light of present knowledge, how to preserve health and prevent deviation from health.

5 class hours a week.

Credits, 5.

Microbiology Department.

Microbiology S-2. (Dairy Bacteriology.) I.

Bacteria and other micro-organisms are the responsible agents for the changes which occur in milk and for the contagion which sometimes causes diseases. They are found in milk at times when leaving the udder, they get in with the dust and dirt while milking, and they adhere to the dairy utensils, which carry them over from one milking to the next. From the cow to the consumer there is the constant presence of these micro-organisms to contend with, on the one hand, and to foster, on the other. All steps taken are significant in their control. The milking process, the handling of the cow, the condition of the milker, the cleansing of utensils, the management of the stable, the feeding, straining, aeration, cooling, clarifying, pasteurizing, — all are steps in the control of micro-organisms.

Many kinds of changes take place in milk, due to different kinds of micro-organisms. Many of these changes are sought, as the ripening of cream for butter, of milk for cheese, of milk for milk drinks; and many of these changes, also, are fought against, as ropy milk, sour milk, bitter milk, tainted milk, etc.

Micro-organisms of typhoid fever, scarlet fever, diphtheria, and others not infrequently find their way through the milk to the consumer, and produce epidemic forms of these diseases.

It is evident, therefore, that to handle milk and milk products safely it is desirable to know something of the agents which are the source of so much attention in the dairy. This indicates the nature of the substance of this course. This course is required of all students who elect dairying as one of their special lines of work.

5 2-hour laboratory periods a week.

Credits, 5.
Microbiology Department.

Rural Sociology S-1. I and II.

Required for seniors. The first part of the course to deal with a study of the individual and his relationships and conflicts in society. Particular note to be taken of rural society and its problems. The remainder of the term to be taken up with specific problem study, individual topics to be assigned and papers prepared and read in class on the same.

5 class hours a week.

Credits, 5.

Veterinary Science S-1. (Animal Diseases.) III.

This course acquaints the student with the more common diseases to which domesticated animals are susceptible. Particular attention is given to conditions favoring diseases, to communicable diseases, and to prophylactic measures, in order that the student may be able to reduce the prevalence of disease among animals in his charge.

5 class hours a week.

Credits, 5.
Department of Veterinary Science.

PHYSICAL EDUCATION

WOMEN

All women students are required to take physical education throughout the first year and may elect it with credit during the first and second terms of the last year.

Undergraduate women students are required to furnish a physical examination report from their family physician.

Physical Education S-1. I.

This course will include such outdoor sports as soccer, basketball, tennis and hiking.

2 class hours a week.

Credits, 2.
Mrs. HICKS.

Physical Education S-2. II.

This course will include posture exercises, folk dances, and games.

2 class hours a week.

Credits, 2.
Mrs. HICKS.

Physical Education S-3 and S-4. I-II. (Elective for seniors.)

Credits, 2.
Mrs. HICKS.

MEN

Required Courses

Physical Education S-1. I. RECREATION. — For freshmen. Outdoor games.
2 laboratory hours a week.

Credits, 2.
Mr. BALL.

Physical Education S-2. I. RECREATION. — For seniors. Outdoor games.
2 laboratory hours a week.

Credits, 2.
Mr. BALL.

Physical Education S-3. III. RECREATION. — For seniors. Outdoor games. 2 laboratory hours a week.

Credits, 2.
Mr. BALL.

All undergraduate male students are given a physical examination upon entering. Students reporting regularly in athletic squads, football, basketball or baseball, are not required to take the above courses.

SHORT COURSES AT THE MASSACHUSETTS AGRICULTURAL COLLEGE

Short Courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore, there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge given. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth, and the demand for these courses in recent years has steadily continued.

A ONE-YEAR VOCATIONAL COURSE IN POULTRY HUSBANDRY

J. C. GRAHAM, LUTHER BANTA, W. C. SANCTUARY, MISS MARION PULLEY

The One-Year Vocational Poultry Course is designed to meet the needs of those who wish to specialize in this branch of agriculture, but who can spend only one year at the college. The course is vocational in its nature, the plan of which is to "learn to do by doing".

In addition to Poultry courses 1 and 2, students elect enough collateral work from Course 11 to make a total of 18 to 20 credit hours. From the close of the Winter School, about March 10, until college closes, the latter part of June, they devote all of their time to poultry work. During the summer vacation, students have an opportunity to secure additional practical experience on general or specialized farms. With the opening of college in the fall, students again devote all of their time to poultry work, finishing the course at the end of the fall term, the latter part of December. As the busy season with poultrymen begins soon after the first of the year, the students, by finishing the course before the holiday season, are ready to accept attractive positions or enter business for themselves.

Courses of Study

Course 1. II. Introductory Course. This course covers a general survey of the poultry industry of the United States as a whole. Particular emphasis is laid upon the operation and possibilities of profitable poultry keeping in New England and the part poultry should play in the development of New England agriculture. 2 class hours per week. 2 credits.

Course 2. II. Poultry Breeding. This is a very practical course covering the improvement of poultry by means of mass selection and pedigree breeding. The laboratory work enables the student to follow through, step by step, eggs from a pedigreed flock from the time they are laid until the hatched chick is banded. 3 class hours, 2 2-hour laboratory periods per week. 5 credits.

Course 3. II. Poultry Diseases. This course endeavors to acquaint the student with the sanitary conditions under which poultry thrive best; the difference between normal and abnormal (disease) physical conditions; the nature and use of disinfectants and antiseptics; and the most modern sanitary practices in keeping flocks free from disease. 3 class hours. 3 credits.

Course 4. III. Poultry Feeding. This course includes a study of common poultry feeds and the most important principles underlying successful feeding practices on commercial farms. The laboratory work includes the care of a pen of birds for a few weeks in order to familiarize the student with the best practices and allow him to get first-hand knowledge on the results of his work. 3 class hours, 2 laboratory periods. 5 credits.

Course 5. III. Incubation and Brooding. Practical lecture and laboratory course in incubation, brooding and growing chicks. Students obtain a knowledge of the fundamental principles underlying these two processes and receive practice in operating both small and mammoth incubators and various types of brooders. 2 class hours and 3 2-hour laboratory periods. 5 credits.

Course 6. III. A conference, observation and general reading course equivalent to 1 or 2 recitations per week. In this course the student becomes acquainted with the best literature on poultry through books, station bulletins, scientific articles, poultry magazines, etc. 1 or 2 class hours; 1 or 2 credits.

Course 7. III. Plant Practice. This course covers a large number of very practical operations not listed under other courses such as: — special work in incubation, pedigreeing, preparation of baby chicks for shipment, caponizing, repairing and making equipment for range and houses and the solution of problems connected with poultry management in general. Work equivalent to 5 credit hours.

Course 8. I. Poultry Judging and Housing. This course covers a study of the economic breeds and varieties of poultry and lays special emphasis upon what is known as culling; that is, a careful interpretation of physical characteristics of poultry in their relation to egg production. Equivalent to 1 class hour and 2 laboratory periods. 5 credits.

Course 9. I. Marketing. This course acquaints the student with market qualifications of poultry and eggs and the requirements of our eastern market centers. The laboratory work covers the grading, packing, and judging of eggs and dressed poultry. A special requirement of this course is the fattening of one or more pens of poultry and the keeping of special data on same. Assisting with the Annual Market Poultry Show is an important part of the course. Equivalent to 1 lecture and 2 laboratory periods. 3 credits.

Course 10. I. This course consists of a discussion of a series of logically arranged problems covering the field of Poultry Farm Organization and Management. Much of the work centers about projects of the individual student. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit. 4 class hours and the equivalent of 1 2-hour laboratory period. 5 credits.

Course 11. II. Supplementary Courses. Each student shall elect from the Winter Short Course or Two-Year Courses under the direction of the Department Head from 10 to 15 credit hours. Courses from the following departments are suggested: Farm Management, Market Gardening, Agricultural Engineering, and Pomology.

Entrance Requirements

Applicants must be at least eighteen years of age and have a good elementary education.

Fees

Effective in September, 1926, a tuition fee of \$20 per term will be charged students, residents of Massachusetts, enrolled in the four-year, two-year, and one-year courses. A laboratory fee of \$5 is required for the fall term and the same for the spring term.

THE SUMMER SCHOOL

The college has maintained a Summer School for the past twenty years. The Summer Course is intended for high school teachers, teachers of agriculture, instructors in home economics, and for students who wish courses in science, education, and horticulture. The course lasts six weeks, beginning about the first of July and continuing through the month to about the second week in August. All courses offered, if successfully completed, carry collegiate credit.

The following schedule of courses, offered in 1927, indicates the nature of the work: —

Principles and Methods of Teaching	Microbiology
Introduction to Psychology	First Principles of Geology and Physi-
Educational Psychology	ography
Secondary Education	Historical Geology
Special Methods in Teaching Voca-	Physical Chemistry
tional Agriculture	Physiological Chemistry
Tests and Measurements	Beekeeping
Supervised Teaching	Horticultural Manufactures
Modern Trend in Educational Philos-	Garden Flowers and Bedding Plants
ophy	Plant Materials
The Employed Teacher of Agriculture	Modern Orchard Practice
Vocational Education	Advanced Systematic Pomology
Clothing	Garden Design
Foods	Surveying and Mapping
Home Furnishing	Types and Varieties of Garden Vege-
Millinery	tables
Insect Life	Forest Ecology
Botany for the Teacher	Plant Physiology
Dramatic Presentation	General Economic Entomology
Public Health	

THE WINTER SCHOOL

The Winter School has been established for a number of years at the college, and has proved to be very popular with farmers, their wives, sons, and daughters, teachers, college graduates, and others. This school begins about the first of January. Instruction was offered last year in —

Soil Fertility	Tree Fruits
Field Crops	Pruning Tree Fruits
Types and Breeds of Live Stock	Spraying
Live Stock Feeding	Small Fruits
Animal Breeding	Harvesting and Marketing
Farm Management	Horticultural Manufactures
Farm Accounts	Floriculture
Farm Motors	Marketing Farm Products
Dairy Bacteriology	Botany
Animal Diseases	Entomology
Poultry Diseases	Rural Sanitary Science and Hygiene
Poultry Husbandry	Agricultural Opportunities for Women
Vegetable Gardening	Food for the Family
Principles and Methods of Teaching	Clothing for the Family
Special Methods in Vocational Agri-	Family Health
cultural Teaching	Home Management
Agricultural Teaching Improvement	Dairying
Problems in Massachusetts	Greenskeepers Course

A series of special two-week courses in ice-cream making, butter making, milk testing, and market milk are offered. During the two weeks the student devotes all of his time to the work of the special course in which he has enrolled. The instruction lasts throughout the day from 8 to 5. These courses meet a very definite need in the State for those who wish instruction, but who cannot attend for a longer period of time, and who do not wish to take other subjects.

DIRECTORY OF INFORMATION

A. The College.

Those desiring college catalogues, the President's annual report, and other pamphlets giving full information relative to entrance requirements, courses of study, expenses, opportunities for student labor, and so forth, should address Robert A. Hawley, Secretary, Amherst, Mass.

All questions regarding admission to the college, either to the freshman class or to advanced standing, should be addressed to William L. Machmer, Dean of the College, Amherst, Mass.

B. Experiment Station.

The Experiment Station conducts investigations in as many lines of agricultural science and practice as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and milk-testing apparatus. Branch stations in cranberry and market-garden culture are maintained in other sections of the State.

The station considers the farmers' problems to be its problems, and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspections, and for other information on the work of the station, should be addressed to Sidney B. Haskell, Director of the Experiment Station, Amherst, Mass.

C. The Graduate School.

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Dr. Henry T. Fernald, Director of the Graduate School, Amherst, Mass.

D. The Extension Service.

Inquiries of a general nature regarding the work of the Extension Service, extension publications, or requests for new lines of work should be addressed to Willard A. Munson, Director of Extension Service, Amherst, Mass.

E. Short Courses.

For information concerning the Short Courses, the Two-Year Course in Practical Agriculture, the Ten-Weeks Winter School, the Summer School, write or apply to Roland H. Verbeck, Director of Short Courses, Amherst, Mass.

MASSACHUSETTS AGRICULTURAL COLLEGE

THE TEN WEEKS' WINTER SCHOOL

1928



THE M. A. C. BULLETIN

Amherst, Massachusetts

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THE TEN WEEKS' WINTER SCHOOL

January 3, 1928 to March 10, 1928

The Winter School has been maintained by the college for over twenty years. It meets a definite need in providing instruction for groups of men and women who can most conveniently leave the farm during the winter months. The school closes in time for students to return to take up the spring work.

In addition to the regular Winter School, the attention of the student is directed to the following special schools offered during the winter period:

The Winter Course in Fruit Growing.

The Winter Course for Greenskeepers and Golf Course Foremen.

The Vocational Poultry Course.

The Dairy School.

The Winter Course for Florists.

In order that the Winter School may serve as many people of the Commonwealth as wish to take advantage of it, no entrance requirements have been fixed other than that the student shall be at least eighteen years of age and shall have completed the elementary or common schools. The expenses are very moderate.

The instruction is thorough. The regular faculty teach the Winter School, assisted, if necessary, by additional instructors and lecturers from outside.

There are no required courses except in the special courses or groups listed above. The advice of the faculty in regard to the course may be had, but the students are left free to select the courses in which they are interested.

The college does not guarantee positions, but frequently has calls for capable, energetic men and women with farm experience. Students interested in securing positions should consult the Supervisor of Farm Placement Training early in the winter. Employers who wish to secure the services of reliable men are also advised to take the matter up directly with the Supervisor of Farm Placement Training in the Short Course Office.

TUITION, FEES AND EXPENSES

There is a tuition fee of \$10.00 for the full Ten Weeks' Winter School and each student is required to pay to the Treasurer a \$5.00 registration fee in addition. There are no laboratory fees in connection with any of the courses. The registration fee and tuition fee, unless sent in advance, must be paid at the time of registration to the Treasurer of the college.

Board may be obtained at the college dining hall for approximately \$7.50 a week. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4 a week for each occupant.

Rooms for women may be secured in private homes. The Short Course Office will be glad to assist students in locating rooms.

REGISTRATION

Students will be registered in classes Tuesday, January 3, at the Short Course Office. Classes will begin Wednesday, January 4, at 8 o'clock A.M.

Upon arrival the student should report at the office of the Director of Short Courses, located in South College; telephone 424.

Advanced Registration Required by December 20.

(Small classes may be cancelled)

Because it frequently happens that only a small group registers in a class, the College finds it necessary to require an enrolment of at least six students in a class. Where classes do not reach this figure by December 20, when registration in advance closes, notice will be sent to prospective students indicating such classes cannot be given.

In the special courses: The Winter School in Fruit Growing, The Winter School for Greenskeepers, The Ten Day Dairy Courses, and The Practical Course for Florists, at least ten students will be required to enroll if the course is given. Be sure and indicate on the application blank in back of catalog what classes or course you desire to attend and send to the College before December 20. Due notice will be given if courses have to be cancelled.

RULES AND REGULATIONS

The choice of subjects is left to the student, but students are advised to elect not less than ten nor more than twenty-five hours per week except when a special school program is taken. All variations from this rule must be approved by the Director of Short Courses.

A class that meets for one hour a day for five days per week is reckoned as five credit hours. A two or three hour laboratory period counts as one class hour.

Information in regard to books used in the various courses will be given by the instructors at the first meeting of the class. The necessary textbooks may be purchased at the Treasurer's office.

As a guide to those who come to the college for the first time, the following extracts are taken from the regular rules of the college: —

The customary high standard of college men in honor, manliness, self-respect and consideration for the rights of others constitutes the standard of student deportment.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right not only to suspend, but also to name conditions under which students may remain in the institution.

Regularity of attendance and conformity to general college rules are required of all Winter School students.

THE LIBRARY

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 73,000 bound volumes and a very large collection of pamphlets, probably twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than six hundred periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is open for readers from 8 A.M. to 10 P.M. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Short Course Students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this material. The librarian and library assistants are always on hand, ready and anxious to help.

THE INFIRMARY

The college maintains an infirmary for the care of sick or injured students. Students are urged to go to the infirmary when in need of the services rendered by the resident nurse or by a physician. Inasmuch as the physical director gives special attention to all student diseases, it is to be expected that students will go to the infirmary at his suggestion.

The infirmary fee is \$2 a day, and will be charged when one or more meals are obtained at the infirmary, or when the student remains at the infirmary for one or more nights.

SCHOLARSHIP

The Jewish Agricultural and Industrial Aid Society of New York instituted in 1908 a system of free scholarships to enable the children of Jewish farmers to attend the short winter courses offered by the agricultural colleges in the states in which they reside. The scholarships are awarded by competition, which consists in the writing of a brief essay on an agricultural topic. Children of Jewish farmers living and working on the farms of their parents are eligible to compete for these scholarships.

Applications for these scholarships should be made to The Jewish Agricultural and Industrial Aid Society, 174 Second Avenue, New York City.

POSITIONS

A student desiring a recommendation from the college must meet the following conditions:

1. He must be of good character.
2. His previous record must be good.
3. His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of farm experience cannot, as a rule, be recommended for positions of responsibility. This is especially true for the better positions for which managers or superintendents are wanted.

DESCRIPTION OF COURSES

GENERAL AGRICULTURE

Soil Fertility

A study will be made of the classification, properties and management of soils. Soil fertility in its broad aspects will be studied. On completing the course the student will be expected to know: the names of the most common soils; methods of moisture control; best tillage practices; value of organic matter; the effects of lime; and the composition, properties and uses of manures and commercial fertilizers. Two class hours and one two-hour laboratory period a week.

Mr. C. H. Thayer

Field Crops

A course dealing primarily with the importance and production of field crops under Massachusetts conditions. Special consideration will be given to such factors as the use of rotations, culture methods, harvesting, and varieties. Practice in seed selection for purity and germination, and in judging such crops as corn and potatoes, will be included. Course one is required. Two class hours and one two-hour laboratory period a week.

Assistant Professor Cubbon

Types and Breeds of Live Stock

Outlines of the market classes and grades of beef cattle, horses, sheep, and swine, placing emphasis upon the characteristics of each class and its adaptations. The characteristics, the adaptations, and so far as is possible the historic development of each of the more important breeds of live stock are also carefully studied, as well as their distribution in America. Special emphasis is laid upon dairy cattle and horses in the judging work. Three class hours and two two-hour judging periods a week.

Live Stock Feeding

A study of the physiology of nutrition, the composition of feedstuffs, and of rational economic feeding. The feeding of dairy cattle and their management for profitable milk production receives first attention. Similarly, the feeding of horses, of beef cattle, of sheep, and of swine is studied. Three class hours a week.

Assistant Professor Glatfelter

Animal Breeding

A discussion of the more common problems pertaining to the breeding of live stock, their explanation and solution; in-breeding; cross-breeding; grading. The work of the most successful men in history is studied. Time is given to the study of pedigrees of the different breeds of dairy cattle and other stock. Three class hours.

Assistant Professor Rice

Farm Management

A study of some of the problems of modern farming and the factors that influence success, such as the choice of a region and of a farm, types of farming, size of farm, rotation of crops, and labor problems. Two class hours and one laboratory period a week.

Professor Barrett

Farm Accounts

Actual practice in the use of a simple system of farm accounting, including cost accounts suitable for the large or the small farm. Two two-hour laboratory periods a week.

Professor Foord

Farm Motors

This course deals with the gasoline engine as used for stationary work, automobiles, and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing. Three class hours and two two-hour laboratory periods a week.

Professor Guinness and Mr. Pushee

Dairy Bacteriology

The characteristics and functions of bacteria and their relation to the different branches of the dairy industry. The scientific basis for cream ripening, sterilization, pasteurization, control of fermentation, and the production of the best quality of market milk. Two class hours and one two-hour laboratory periods a week.

Mr. Packard

Animal Sanitary Science

The conservation of health is the keystone of successful animal husbandry. This course acquaints students with the essentials upon which the health of animals depends. In order that students may later guard the animals in their charge, attention is given to conditions favoring communicable and non-communicable diseases, and to prophylactic measures. Five class hours a week.

Doctor Lentz

Poultry Diseases

This course is planned for students specializing in poultry work. Anatomy and physiology of the domestic fowl are briefly considered, and particular attention is devoted to the diseases which may cause heavy losses in the flock. Prevention rather than cure is emphasized. Two class hours and one laboratory period per week.

Professor Sanctuary

Poultry Husbandry

This course meets the needs of those who can spend only a short time at the college, but who wish to get a general survey of poultry keeping and some technical knowledge of the latest and most scientific methods in vogue. It is a lecture and laboratory course, the former covering opportunities in poultry culture, poultry housing, winter egg production, incubation and brooding, feeds and feeding, poultry management, and the most popular methods of marketing poultry and eggs in Massachusetts. The laboratory work consists of demonstrations and practical work in killing, picking, caponizing, judging and culling for egg production, and studying types and construction of incubators and brooders. Practical work in operating incubators is given to as many as can be accommodated. The large poultry plant furnishes facilities for demonstrating various methods of



Mixing Fertilizer



Studying Field Crops

housing and feeding. A splendid opportunity is afforded to those who have time for observation work outside of class hours. Five class hours and one two-hour laboratory period per week.

Professor Banta

Vegetable Gardening

The successful commercial production of vegetables requires a clear understanding of the problems that the vegetable grower meets. Practical contact is made with these in so far as the season of the year and time devoted to the work permit. Classroom instruction aims to make clear the fundamental principles underlying the problems, and gives opportunity for discussion. The laboratory periods aim to give the student practice in applying the basic principles to the problems he is to meet as a commercial vegetable grower. Some of these will be discussed under the leadership of market gardeners and specialists.

Students electing this course are required to take soil fertility and it is recommended that they take botany and entomology. Three class hours and two two-hour laboratory periods a week.

Mr. Stout

Horticultural Manufactures

The utilization of culls and low-grade fruits and vegetables, and the marketing of excess crops are always serious problems to the producer. The economic conversion of these materials into palatable nutritious food products is becoming a greater necessity each year.

This course aims to place before the student the fundamental principles underlying the various means of food preservation and the manufacturing of food products.

The canning, drying, and storage of fruits and vegetables, together with the manufacture of many of their products, will be studied in detail, and the methods illustrated with laboratory exercises. Students will be given opportunity to do canning and drying, to manufacture many fruit and vegetable products, and to investigate storage conditions. The work in both classroom and laboratory will be of such a character as to be readily applied in the home or in the farm factory. Two class hours and two laboratory periods per week.

Prof. Chenoweth and Mr. Cartwright

The Supply and Marketing of Farm Products in Massachusetts

Marketing Farm Products. — This course is planned to give a critical description of the methods used by successful New England farmers and farmers' associations in selling farm products. Among the problems specifically studied are those of grading and storing farm products, and transporting them to market; the methods commonly used to finance the marketing process; the factors which influence prices; and the importance of efficient marketing in increasing farm income. Two class hours per week.

Miss Foley

Botany

A study of the structure, functions, and diseases of greenhouse, garden, orchard, and field crops, together with methods of disease prevention, including spraying and the application of fungicides. Two class hours a week.

Assistant Professor McLaughlin

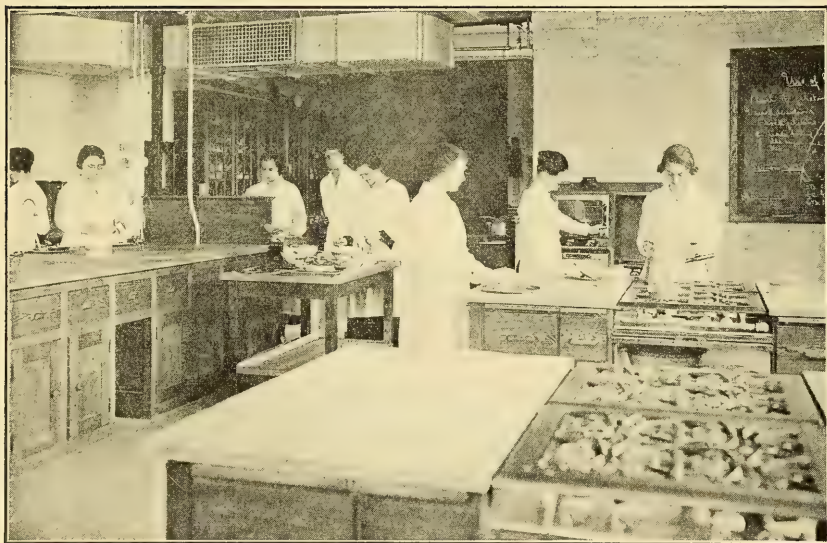
Entomology

The course in entomology covers the topics outlined below. It is aimed to cover the fundamentals of insect life and insect control rather fully and to familiarize the student with the most important pests of New England. Time will permit the discussion of only the more important of these.

1. Insects and their nearest relatives — how to distinguish them.
2. Structure or make-up of insects and the practical application of this knowledge in insect control.



Table Decorations by the Class in Floriculture



A Course in the Cooking School

3. Development, metamorphoses (changes), and stages of insect life.
 4. Control — including the composition, preparation, combination and use of insecticides, fumigants, etc.
 5. Spraying apparatus and its use.
 6. Beneficial and injurious insects.
 - A. The life history, habits, behavior and control.
 - B. Beneficial insects.
- Three class hours a week.

Mr. Farrar

Rural Sanitary Science and Hygiene

Significance of sanitary science in the relation to health: the theories of disease; air and ventilation; water and its protection; sewage disposal and purification; foods, their care and preservation; carriers of disease, susceptibility and immunity; infectious diseases; disinfection. Two class hours a week.

Mr. Packard

Agricultural Opportunities for Women

An outline of the occupational progress of women, with special attention to the vocational opportunities for women in agriculture and related fields. Two class hours a week.

Miss Hamlin

UNIT COURSES IN HOME ECONOMICS

Unit courses in Home Economics are offered for those interested in the newer aspects of Home Economics. Each course is planned to give in brief, fundamental principles of the topic in order to provide background for practical application in the study of specific problems. These courses will be of interest to the young woman at home, the club leader, the local extension leader, the social worker, and the homemaker.

Foods and Nutrition

In all budgets the largest expenditure must be for food. This course aims to assist in the selection and buying of such foods as will tend to maintain health. Emphasis will be given to the planning and preparation of meals to satisfy taste, health, and pocket-book. The adaptation of meals to children and school lunches will also be considered. Two class hours, and two three-hour laboratory periods a week.

Miss Knowlton

Textiles and Clothing

This course will include a study of buying, making and caring for clothing for the individual and the family. There will be practical work in making garments with emphasis on the selection of suitable materials of good value and on short cuts, and easy methods of construction. The selection and cost of a suitable attractive wardrobe will be studied through comparison of ready made and home made clothing. The course will include a brief study of textile fibers, manufacture and tests.

Approximate cost of materials used \$5.00-\$10.00. Two class hours and two three-hour laboratory periods a week.

Miss Tucker

Health Education

The aim of this course is to teach fundamental principles of maintaining health. This will include ways of living to prevent sickness, the care of the individual in case of unavoidable sickness, and the right attitudes towards health. Three class hours a week.

Miss Skinner

Home Management

Every woman wishes a home which runs smoothly, whether it be a single room, an apartment, or a large house. This course aims to assist in such ways as these: selection and care of equipment, study of best ways of working, use of time and labor-saving devices, and securing the largest measure of satisfaction in spending the income. Five class hours a week.

Miss Skinner

VOCATIONAL AGRICULTURAL TEACHING

The Massachusetts Agricultural College has been designated by the State Department of Education as the institution for training teachers of vocational agriculture for the State. The work is being carried along the following lines:

1. Regular college courses, four or five years, leading to a degree.
2. Shorter courses to supplement the training of more mature men who are partly qualified through practical experience, or through scientific study of agriculture, or through study of methods and principles of education, or through teaching experience.

3. Professional improvement training for employed teachers in regular college courses, courses in the winter term, or courses specially organized on request of a sufficient number of students.

The Winter Short Course period provides in part for the second and third lines. An intensive course during the first two weeks is provided for the instructors who may leave their teaching for only a brief period. This course may be continued on a higher schedule for such persons as may be able to remain throughout the winter term.

For all of these there will be an opportunity to take courses in general agricultural teaching, special Massachusetts problems, and agricultural subject-matter. An attempt will be made to furnish any subject-matter course which enough men may request.

High school principals and science teachers who have had farm experience, or practical agriculturists, may find this an opportunity to qualify for vocational teaching, — a field in which the demand is fairly strong.

The educational courses supplemented by an adequate amount of agriculture will be credited by the Department of Education towards approval of candidates or for professional improvement programs. Similar courses are offered in the summer school.

The following courses have proved to be of greatest benefit to those enrolled at this time:

Principles and Methods of Teaching

The course is of most benefit to those who expect to teach or who are teaching. It covers some of the general principles and methods of teaching and their application to particular cases. This latter means a study of cases in school work, taken from actual experience, analyzed and illustrated by the class. Outside reading beyond the text in hand is required. By arrangement with the instructor, Winter School students may come into the regular class. Five class hours per week.

Professor Welles

Special Methods in Vocational Agricultural Teaching

This course consists of intensive work on the important principles underlying the successful teaching of vocational agriculture and a thorough study of the special plans and activities of the teacher of this subject. The job is analyzed to determine what the teacher must know as to character, setting, technique, and relations of his work. All available sources are consulted for information as to State requirements, industrial conformity, and professional ideals. Illustrative material showing how particular departments and schools work out their problems in this subject is gathered and studied. Plans for the year's work, unit study and daily lessons are worked out on the home-project basis. Special lessons are planned and taught by students in moot class.

In case both experienced and untrained men apply for this course, the group may be divided into two sections. Five class hours per week.

Professor Welles and Mr. Heald

Agricultural Teaching Improvement Problems in Massachusetts

A seminar course for employed teachers or directors of vocational agriculture, dealing with problems which constantly arise in the agricultural schools of the State. Prospective teachers may be admitted by special arrangement. Includes plans for the coming season, and campaigns for improved methods based on experiences and needs of men in service; for this season special emphasis on summer teaching of related subjects, and the proper approach to teaching a vocational topic.

Class meets for double periods five days each week for two weeks. The class will continue for a longer term at four days each week if there is a sufficient demand.

Mr. Heald

TEN WEEKS' WINTER COURSE IN FRUIT GROWING

MASSACHUSETTS AGRICULTURAL COLLEGE AMHERST, MASS.

January 3 to March 10, 1928

A specialized course in fruit growing intended for persons who are interested in the growing of fruit for profit.

The work will require practically all of the student's available time while at the college and every student is expected to take all the courses offered.

Enrollment is limited to fifteen students.

TABLE OF REQUIRED COURSES

Course	Class Hours	Laboratory Periods	Total Credits
I. Tree Fruits	4	1	5
II. Pruning	2	2	4
III. Spraying	3	1	4
IV. Small Fruits	3	—	3
V. Harvesting and Marketing	2	2	4
VI. Farm Motors	3	2	5

Description of Courses

I. *Tree Fruits.*

A study of fundamental problems connected with the production of apples, pears, peaches, plums, and cherries. The course includes a consideration of such questions as the selection of varieties, propagation, purchasing and handling nursery stock, planning and setting an orchard, the care of young trees, and the management of bearing orchards.

Students are given practice in the identification of common varieties, in selecting fruit for show purposes, in judging, and in the most useful methods of budding and grafting. Four class hours and one two-hour laboratory period a week.

Mr. French

II. *Pruning Tree Fruits.*

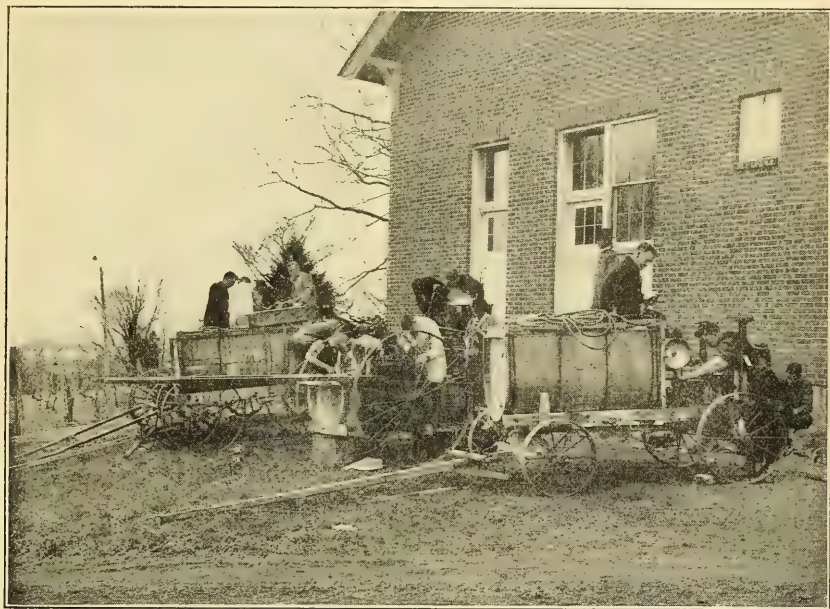
A consideration of modern methods of pruning apples, pears, peaches, and other tree fruits. In addition to class room discussions, students are required to prune trees in the orchards until familiar with the pruning of each fruit. Related

subjects are studied also, such as the relation of pruning to fruit bearing, the best types of pruning tools, dressings for pruning wounds, and the care of topworked trees. Two class hours and two two-hour laboratory periods a week.

Mr. Roberts

III. *Spraying.*

A thorough study of modern methods of pest control in orchards. Spray pumps, nozzles, spray guns, and other spray machinery are examined and operated, and spray materials are made and studied. The damage done by common orchard insects and diseases is considered, and their life histories are studied in relation to



Studying Orchard Spray Rigs

control methods. Attention is given also to the development of spray schedules for common fruits. A good assortment of modern sprayers ranging from types of hand machines to heavy power outfits is available for study and trial. Three class hours and one two-hour laboratory period per week.

Mr. Roberts

IV. *Small Fruits.*

This course deals with all the principal small fruits grown in Massachusetts, such as strawberries, raspberries, blackberries, currants, and grapes. It attempts to answer such questions as: What varieties are best adapted to our Massachusetts conditions? How shall we prune our grapes, raspberries and blackberries? What method of training will give the best results? How can we control the pests which attack these fruits? What type of culture and fertilizing is best for each of them? When and how should we harvest them, and how should we pack and market them in order to secure the highest prices? Three class hours per week.

Professor Sears

V. *Harvesting and Marketing.*

This course is concerned with the handling of fruits from the tree to the consumer. The picking, grading, packing, storing, and marketing of fruits are considered in detail, and practice in grading and packing apples is continued until a fair degree of skill is acquired.

Grading laws are studied and discussed, also such subjects as types of storage, storage troubles and how to avoid them, sizing machines, packages and their uses, and markets and market requirements. Two class hours and two two-hour laboratory periods per week.

Professor Van Meter

VI. *Farm Motors.*

This course includes study and practice work with the types of gasoline engines commonly used on fruit farms. Lectures and textbook assignments deal with the theory and construction of stationary engines, automobiles and tractors, and their practical operation is studied in the laboratory. Special attention is given to overhauling and repairing. Three class hours and two two-hour laboratory periods per week.

Professor Gunness and Mr. Pushee

PRACTICAL AND SCIENTIFIC COURSE FOR FLORISTS

MASSACHUSETTS AGRICULTURAL COLLEGE
AMHERST, MASS.

January 3 to March 10, 1928

A special course for men and women engaged in floricultural work will be given at the Massachusetts Agricultural College beginning on January 3, 1928, and continuing through a period of ten weeks, closing March 9, 1928.

The course has been arranged in co-operation with the Boston Gardeners' and Florists' Club which is represented by a committee consisting of the following: W. N. Craig, Horticulturist, Weymouth, Mass., President of the Club, Chairman. Harold A. Ryan, Retail Florist, Cambridge, Mass., Ex-President of the Club. W. H. Judd, Arnold Arboretum, Jamaica Plain, Mass., Ex-President of the Club.

Program of Studies

The work, as outlined by the committee in co-operation with the Department of Floriculture and scheduled for the coming term, is as follows:

I. Soils and fertilizers, covering the origin of soils, soil types, soil moisture, tillage, organic matter, humus, fertilizers, mixing and application of fertilizers, etc.

Assistant Professor M. H. Cubbon

II. *Commercial Floriculture.* — A brief consideration of greenhouse construction and heating, principles of greenhouse management, propagation, cultural methods and practices in the growing of the important commercial crops under glass.

Mr. S. C. Hubbard

III. *Garden Flowers and Bedding Plants.* — A study of annuals, biennials, herbaceous perennials, tender perennials, and bedding plants which are commonly used in commercial floriculture. Methods of propagation, culture and uses will be considered; production of new varieties.

Professor C. L. Thayer

IV. *Floral Arrangement.* — A study of the principles underlying the arrangement and use of cut flowers and plants; basket and vase arrangements, table decorations; home, church, and other interior decorations; funeral designs and arrangements. This course will also include a study of color as applied to such work.

Assistant Professor R. T. Muller

V. *Insect Pests.* — A study of the insects injuring floricultural crops — how to recognize them and their work in different stages, their habits and life histories, conditions favoring their development, and the most effective control measures.

Mr. K. A. Salman

VI. *Plant Diseases.* — The diseases attacking floricultural crops — how to identify them, how they grow and develop, cultural practices favoring diseases, and the methods of control.

Assistant Professor W. H. Davis



Nursery Practice



Class Work in Greenhouses

VII. Special lectures by commercial florists, retail florists, gardeners, and others, on such subjects as greenhouse construction, heating, wholesaling, retailing, advertising, commercial crops, pot plants, bedding plants, perennials, design work, etc.

General Requirements

The number of students will be limited to fifteen. Applicants should register early, as they will be accepted in order of their application. Students will have all the advantages and privileges of the Winter School.

No entrance examinations are required, but it is expected that every student will have a reasonable general education, especially in the English language, and that he will have had some practical experience in floricultural work. If possible, each student should present a personal recommendation from his employer or from some person of his acquaintance, showing the experience of the applicant in floricultural work.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student whose presence, for any reason, proves detrimental to other members of the school. Strict attention to the work of the course will be required of all students.

Those who complete the entire course with credit will receive the Winter School certificate of the college.

Expenses

	Low	High
Registration fee	\$5.00	\$5.00
Tuition	10.00	10.00
Board (10 weeks at \$7.50)	75.00	75.00
Room rent (10 weeks at \$2.50-\$4.00)	25.00	40.00
Textbooks	10.00	15.00
	\$125.00	\$145.00

Information

For further information communicate with any member of the previously mentioned committee, with the Short Course Office, or with Professor C. L. Thayer, Massachusetts Agricultural College, Amherst, Mass.

TEN WEEKS' COURSE FOR GREENSKEEPERS

A specialized course for men engaged in the profession of greenskeeping, or members of greens committees. This course has been arranged in co-operation with the New England Greenskeepers' Club, and the subjects as outlined can be effectively studied during the winter months.

General Requirements

Applicants for this school must be members of the greens committee, greenskeepers, or must have had at least one season's experience on a golf course, and their application blanks must be countersigned by the greenskeeper and chairman of the greens committee.

No entrance examinations are required, but it is expected that the student will have a reasonable education in the English language.

The number of students is limited to ten, and registraton will be confined to citizens of Massachusetts until December 1, 1927. After that date, if there are vacancies, out-of-state students will be admitted in order of the filing of their applications.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student for misconduct, or failure to properly meet the requirements of the course.

The winter school certificate will be given to those who complete the full course with credit.

COURSES OFFERED

			Credits
I.	Motors	Jan. 3-Mar. 10	5
II.	Water Systems	Jan. 3-Feb. 4	2½
III.	Soils and Fertilizers	Feb. 6-Mar. 11	2½
IV.	Equipment	Jan. 3-Feb. 4	2½
V.	Managerial Problems	Feb. 6-Mar. 11	2½
VI.	Grasses and Grass Seed	Jan. 3-Feb. 11	3
VII.	Drainage	Feb. 13-Mar. 10	2
VIII.	Fundamentals of Landscape Arrangement	Jan. 3-Jan. 28	2
IX.	Cost Keeping and Analysis	Jan. 30-Mar. 11	3

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Description of Courses

I. *Motors*. — This course deals with the gasoline engine as used for stationary work, automobiles and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing.

Professor Gunness and Mr. Pushee

II. *Water Systems*. — A study of standard types of water systems, with particular reference to the relation of size of pipe, pressure and nozzles, to the flow and delivery of water.

Professor Gunness

III. *Soils and Fertilizers* (special for greenskeepers). — Fundamental properties of soils and their management as related to golf green conditions will constitute the main part of the course. The study of fertilizers and their uses will be made as complete as possible. Individual problems and discussions will be given all the time and attention warranted. Twenty-five hours of class work, to be divided between class room and laboratory as is convenient.

Assistant Professor M. H. Cubbon

IV. *Equipment*. — A study of the major equipment used on the golf course, with particular reference to mowers (fairway and putting green), spraying equipment and compost mixers. A very thorough study of lawn mowers will be made in this course. All types of mowers are available for study. Minor equipment will also be discussed.

Assistant Professor L. S. Dickinson

V. *Managerial Problems*. — This course uses for its laboratory a very large and complete model of a golf course, about which the many problems of a greenskeeper are discussed. The model is so complete that the discussion is practical and not of a theoretical nature.

For example: The economy of properly routing a fairway mower will be demonstrated.

Assistant Professor L. S. Dickinson

VI. *Grasses and Grass Seed*. — This course will enable the student to identify the various grasses, also grasses and weed seeds usually found in seed mixtures. The relative germination of grass seeds will be demonstrated and applied to their uses for golf and tennis court purposes. The soil and fertilizer requirements of the various grasses will be discussed.

Assistant Professor L. S. Dickinson

VII. *Drainage*. — The entire problem of land drainage will be discussed and practical problems worked out. The student will be taught the use of the level and how to set ditch grades.

Assistant Professor Markuson

VIII. *Fundamentals of Landscape Arrangement of Trees, Shrubs and Walks.* — Principles of Landscape Arrangement, particularly adapted to golf club houses. Desirable varieties of shrubs and trees and their adaptability to various soils and weather conditions.

Mr. Towne

IX. *Cost Keeping and Analysis.* — The value of cost keeping and its analysis will be demonstrated, and a method of cost keeping will be taught. The many factors that enter into the cost will be noted, analyzed and adopted to individual problems. The distribution and directing of the workmen will also be studied.

Assistant Professor L. S. Dickinson

WINTER SHORT COURSES IN DAIRYING

January 16 to February 24, 1928

STAFF OF INSTRUCTION

J. H. FRANDSEN, M.S., *Professor of Dairying.*

M. J. MACK, M.S., *Ass't Professor of Dairying.*

H. G. LINDQUIST, M.S., *Instructor in Dairying.*

In addition to the above, specialists in the commercial field will be secured to help with the laboratory work and discussion.

CALENDAR, JANUARY 16, 1928, TO FEBRUARY 25, 1928

- Course I. Testing, Analyzing and Inspecting Dairy Products, Monday, January 16, 8 A.M., to Friday, January 27, 12 M.
- Course II. Milk Plant Operation: Manufacture of Surplus Milk Products, Monday, January 30, 8 A.M., to Friday, February 10, 12 M.
- Course III. Ice Cream Making, Monday, February 13, 8 A.M., to Friday, February 24, 12 M.

GENERAL INFORMATION

To meet the ever-increasing demand for trained men in the dairy industry, the Massachusetts Agricultural College is offering a series of ten-day courses in dairying. These courses will be offered between January 16 and February 24, 1928. The courses cover the underlying principles of milk plant operation and ice cream, butter and cheese making, special emphasis being placed on milk plant and ice cream operations, and on the testing, analysis and inspection of dairy products.

Many a milk plant or creamery operator, superintendent, or foreman would be more efficient and would get more satisfaction out of his work if he fully understood the fundamental reasons concerned with the successful operation of his dairy plant.

It is the man who wants to know more about his work, and who is anxious to become expert enough to advance in it, that plant operators can more profitably encourage to take these courses. Owners of dairy plants sending men of this type will profit principally through the fact that the men will learn economy of operation resulting in a saving of labor, and better handling and processing methods resulting in a better and more uniform product. The courses are purposely given at a time of year when help can most easily be spared.

The courses are intended not only for experienced creamery or milk plant men but for men having little dairy experience. Those who are inexperienced should plan to take all of the courses. Farm men and women who are responsible for milk handling, butter making, or the making of soft cheese will also find these courses adapted to their needs.

The courses are so arranged that a student can report for the first course on January 16 and take all the courses in succession, finishing February 24, or he can take any course separately. There are no prerequisites in any course. A certificate showing the subject studied is given at the end of each course to those doing satisfactory work.

Admission. — There are no entrance requirements except that the student must be eighteen years of age, and must have a common school education.

Registration. — Students should enroll by mail. See application blank in back of catalogue.

Enrollment for Course I, "Testing, Analyzing and Inspecting Dairy Products," must be made by January 14, 1928. Those failing to enroll by mail may enroll on January 14. Students should arrive January 15 as classes begin at 8 A.M., January 16.

Enrollment for Course II, "Milk Plant Operation; Manufacture of Surplus Milk Products," must be made on or before January 28.

Enrollment for Course III, "Ice Cream Making," must be made on or before February 11 and should be made by mail by *February 1*, as it will be necessary to limit the size of the class if it gets too large. Those enrolling first will be given preference. *Note:* A second course will be given if the number of students warrant it.

All applications for entrance to these courses should be addressed to the director of Short Courses, Massachusetts Agricultural College, Amherst, Mass.

Upon arrival the student should report at the office of the Director of Short Courses in South College, telephone 424, for information concerning rooming accommodation.

Tuition, Fees and Expenses. — There is a tuition fee of \$2.00 for each course, and each student is required to pay the Treasurer a registration fee of \$2.00 per course. These fees must be mailed with the application.

Students will need white suits for laboratory work, and may wish to purchase one or more textbooks for each course.

Board may be obtained at the college dining hall for approximately \$7.50 a week. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4.00 a week for each occupant.

Positions. — The dairy department is often called upon to recommend candidates for positions, and stands ready to recommend those who take these courses with the idea of getting positions, providing they are of good character, have good previous records, and do satisfactory work in the courses.

Methods of Instruction. — Instruction is given (1) by lecture, by recitation and discussion, and by the working out of problems; (2) by practical work in the laboratories. In general, two one-hour periods each day will be allowed for discussion and two three-hour periods for laboratory work. The student is expected to give practically the entire day from 8 A.M. to 5 P.M. to his work. The services of the entire department are available at different times for men taking these courses.

Flint Laboratory. — The dairy building is practically new, and with its equipment stands as one of the best college dairy buildings in the country. The testing laboratory is spacious and is well equipped for testing milk and its products. Equipment includes a Mojonnier Tester. A regular supply of milk and cream is received daily, and the market milk department is equipped to weigh, clarify, pasteurize, and handle in a modern way the milk and cream and all products made therefrom.

There is a ten-ton compression refrigerating system in the building arranged for making ice, freezing ice cream and cooling the ice-cream hardening box. The ice-cream room contains two brine freezers and one tub freezer, a mixing tank, emulsing and viscolizing outfits, a filling machine, and other smaller equipment. The butter department is equipped with power and hand churns of different makes, starter-making equipment, pasteurizers, and various makes of separators. The cheese room is equipped to make cheese of all kinds, and especially soft cheese.

Description of Winter Courses

Course I. Testing, Analyzing and Inspecting Dairy Products (January 16-27).

This course is designed to help men and women to become more proficient in operating the Babcock test, lactometer acid test, over-run test and moisture test, and the Mojonnier test, as well as other tests commonly used in the testing, analyzing, or inspecting of dairy products.

The course will also offer opportunity for securing the latest information of value to those who plan or are now engaged in some phase of dairy work.

Course II. Milk Plant Operation: Manufacture of Surplus Milk Products (January 30-February 10).

This course is designed to help milk plant and creamery employees to a better understanding of economy of operation and uniformity of product. It will help prepare men to be foremen and superintendents in milk plants.

Some of the lecture and discussion topics are: general scope of the market milk industry, value of milk as a food, relation of bacteria to milk, sanitary production, marketing, plant construction and selection of equipment, processing delivery, handling surplus, standardizing, grading and labeling, and care of milk in the home. Special attention will be given to economic methods of marketing surplus milk through cottage and other soft cheeses, and commercial buttermilk.

Laboratory exercises will cover milk sampling, the scoring of dairies, cream line problems, the scoring of milk, the study of milk plant equipment, milk processing, the manufacture of commercial buttermilk, of cottage, neufchatel, and cream cheese and butter.

Practical application of dairy tests and of lecture work will be carried out in the college creamery and dairy barn.

Course III. Ice Cream Making (February 13-24).

This course aims to present the most up-to-date information on ice cream making and fit men to operate or take charge of operating any part of the ice cream business.

Lectures and discussions will cover the selection of ingredients for the mix, standardizing and calculating the mix, processing the mix, factors influencing the yield, causes and remedies of ice cream defects, the manufacture of brick ice cream, special ice creams and fancy molds, marketing ice cream, and the handling of ammonia refrigerating plants.

Laboratory exercises will include work on the whipping properties of different creams, tests of ingredients used in the mix, study of ice cream equipment and its operation, calculating and making up of the ice cream mix, effect on the quality of ice cream of such factors as fat content, solids not included in the fat content, temperature of the mix, temperature of brine, age of the mix, speed of the dasher, treatment of the cream or mix, and making various kinds of frozen delicacies.

THE TWO-YEAR COURSE IN PRACTICAL AGRICULTURE

The Two-Year Course in Practical Agriculture is intended for men and women who desire a working knowledge of the best methods in farming but who cannot spend four years in college. An applicant for admission must be at least 17 years of age and must have a common school education.

There is a tuition fee of \$20.00 per term, or \$60.00 per year, for residents of Massachusetts; others are charged \$60.00 per term, or \$180.00 per year. All students must pay small laboratory fees in several courses.

The course is so organized that each student specializes along one of the following lines: animal husbandry, poultry, dairy manufactures, general horticulture, fruit growing, floriculture, or vegetable gardening. Each specialized course is

intensive, with emphasis on practical work under competent supervision. It covers two winters and the intervening summer. The first year is made up of six months of study at the college followed by six months of practical farm experience on selected farms. Nine months more of study at the college completes the course. Each student, at graduation, receives a certificate showing the subject studied.



Constructing a Poultry House

A ONE-YEAR VOCATIONAL COURSE IN POULTRY HUSBANDRY

January 3 to December 15, 1928

J. C. GRAHAM, W. C. SANCTUARY, LUTHER BANTA, MISS MARION PULLEY

The One-Year Vocational Poultry Course is designed to meet the needs of those who wish to specialize in this branch of agriculture, but who can spend only one year at the college. The course is vocational in its nature, the plan of which is to "learn to do by doing."

In addition to Poultry courses 1 and 2, students elect enough collateral work from Course 4 to make a total of 18 to 20 credit hours. From the close of the Winter School, about March 10, until college closes, the latter part of June, they devote all of their time to poultry work. During the summer vacation, students have an opportunity to secure additional practical experience on general or specialized farms. With the opening of college in the fall, students again devote all of their time to poultry work, finishing the course at the end of the fall term, the

latter part of December. As the busy season with poultrymen begins soon after the first of the year, the students, by finishing the course before the holiday season, are ready to accept attractive positions or enter business for themselves.

Courses of Study

Course 1. II. Introductory Course. — This course covers a general survey of the poultry industry of the United States as a whole. Particular emphasis is laid upon the operation and possibilities of profitable poultry keeping in New England and the part poultry should play in the development of New England agriculture. 2 class hours per week. 2 credits.

Course 2. II. Poultry Breeding. — This is a very practical course covering the improvement of poultry by means of mass selection and pedigree breeding. The laboratory work enables the student to follow through, step by step, eggs from a pedigreed flock from the time they are laid until the hatched chick is banded. 3 class hours. 2 two-hour laboratory periods per week. 5 credits.

Course 3. II. Poultry Diseases. — This course endeavors to acquaint the student with the sanitary conditions under which poultry thrive best; the difference between normal and abnormal (disease) physical conditions; the nature and use of disinfectants and antiseptics; and the most modern sanitary practices in keeping flocks free from disease. 2 class hours. 1 laboratory period. 3 credits.

Course 4. II. Supplementary Courses. — Each student shall elect from the Winter Short Course or Two Year courses under the direction of the Department Head from 10 to 15 credit hours. Courses from the following departments are suggested: Farm Management, Market Gardening, Agricultural Engineering, and Pomology.

Course 5. III. Poultry Feeding. — This course includes a study of common poultry feeds and the most important principles underlying successful feeding practices on commercial farms. The laboratory work includes the care of a pen of birds for a few weeks in order to familiarize the student with the best practices and allow him to get first hand knowledge on the results of his work. 3 class hours. 2 laboratory periods, 5 credits.

Course 6. III. Incubation and Brooding. — Practical lecture and laboratory course in incubation, brooding and growing chicks. Students obtain a knowledge of the fundamental principles underlying these two processes and receive practice in operating both small and mammoth incubators and various types of brooders. 2 class hours. 3 two-hour laboratory periods. 5 credits.

Course 7. III. A conference, observation and general reading course equivalent to 1 or 2 recitations per week. In this course the student becomes acquainted with the best literature on poultry through books, station bulletins, scientific articles, poultry magazines, etc. 1 or 2 class hours. 1 or 2 credits.

Course 8. III. Plant Practice. — This course covers a large number of very practical operations not listed under other courses such as: — special work in incubation, pedigreeing, preparation of baby chicks for shipment, caponizing, repairing and making equipment for range and houses and the solution of problems connected with poultry management in general. Work equivalent to 5 credit hours.

Course 9. I. Poultry Judging and Housing. — This course covers a study of the economic breeds and varieties of poultry and lays special emphasis upon what is known as culling; that is, a careful interpretation of physical characteristics of poultry in their relation to egg production. This course also covers the subject of poultry housing, including designing, types, construction, fixtures and relative costs. 3 class hours. 2 laboratory periods. 5 credits.

Course 10. I. Marketing. — This course acquaints the student with market qualifications of poultry and eggs and the requirements of our eastern market centers. The laboratory work covers the grading, packing and judging of eggs and dressed poultry. A special requirement of this course is the fattening of one or more pens of poultry and the keeping of special data on same. Assisting with the Annual Market Poultry Show is an important part of this course. Equivalent to 2 lecture and 2 laboratory periods. 4 credits.

Course 11. I. This course consists of a discussion of a series of logically arranged problems covering the field of Poultry Farm Organization and Management. Much of the work centers about projects of the individual student. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately \$15. This is required of each student taking the course for credit. 4 class hours and the equivalent of 1 2-hour laboratory period. 5 credits.

THE SIX WEEKS' SUMMER SCHOOL

The Summer School at the Massachusetts Agricultural College has been a feature of the short course work for the past twenty years.

In 1924 for the first time the school was operated on a college credit basis, only graduate and under-graduate work being offered.

For 1928 the Summer Session will begin July 5 and close August 18. The following courses were offered during the past summer:

Collegiate Courses

- Education
- Home Economics
- Science and Allied Subjects

Courses in Education and Allied Subjects

- General Psychology
- Advanced Educational Psychology
- Tests and Measurements
- Modern Philosophy of Education
- Principles and Methods of Teaching
- Special Methods in Teaching Vocational Agriculture
- Supervised Teaching
- Principles of Secondary Education
- The Employed Teacher of Agriculture
- Vocational Education

Courses in Home Economics

- Clothing
- Foods
- Millinery
- Home Furnishing

Science and Allied Courses

- Public Health
- Dramatic Presentation
- Botany for the Teacher
- Insect Life
- Microbiology
- First Principles of Geology and Physiography
- Historical Geology
- Physical Chemistry
- Physiological Chemistry
- Beekeeping

Graduate and Undergraduate Courses in Horticulture

- Modern Orchard Practice
- Advanced Systematic Pomology
- Horticultural Manufactures
- Garden Design
- Surveying and Mapping
- Plant Materials

Graduate and Undergraduate Courses in Horticulture—*Continued*

Garden Flowers and Bedding Plants

Types and Varieties of Garden Vegetables

Forest Ecology

Plant Physiology

General Economic Entomology

Tuition fee \$10.00 for six weeks' term. All other expenses very moderate.

For catalog, write Director of Short Courses, Massachusetts Agricultural College,
Amherst, Mass.

